ANNUAL REPORT

of the

DEPARTMENT *of* SURGERY

1959

The New York Hospital-Cornell Medical Center

525 East 68th Street, New York 21, N. Y.

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DEPARTMENT OF SURGERY
The New York Hospital-Cornell Medical Center
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by Frank Glenn, M.D.
S. W. Moore, M.D. John M. Beal, M.D.

To the President of the Board of Governors of the Society of The New York Hospital and the President of the Board of Trustees of Cornell University:

It is a privilege as well as a responsibility to render to you the annual report of the Department of Surgery for 1959. Included in it are references to those attainments during the decade of the 50's that indicate current trends in surgery. These emphasize the increasing rapidity with which progress is being made, with a constant broadening of the application of surgical therapy to the disabilities of people in all age categories.

Dr. Bernard Samuels died July 26, 1959. Starting in 1914 as Instructor in Ophthalmology, his outstanding abilities were soon recognized and his responsibilities increased. From 1927 to 1941 he served as head of the Eye Department and Professor of Ophthalmology, continuing the latter as Emeritus Professor and consultant in his speciality. Teaching was one of his chief interests, and he possessed a remarkable flair for student instruction. He was an active member of most of the ophthalmological societies here and in Europe, and was president of the XVII International Congress of Ophthalmology held in New York City in 1954. His death is a loss to this medical community.

Dr. Thomas J. Kirwin died August 18, 1959. The recipient of six degrees from five universities, he came to the hospital in 1920 and rapidly rose to attending surgeon in 1934. Active in urological societies in this country, he was also a member of the Italian, Japanese, and Rumanian societies. He was an active and productive writer, and co-author with Dr. O. S. Lowsley of *Clinical Urology.* A lively and warm personality with a positive character and vigorous opinions, he will be greatly missed.

Dr. Gervais W. McAuliffe resigned November 30, 1959. Starting as Instructor in Otolaryngology in 1932, he served also as Assistant Professor and Associate Professor of Surgery (Otolaryngology) until his resignation. He has taken an active part in the teaching program and given much of his time and loyal support to the hospital. It is with deep regret that his resignation is accepted. He has been appointed Senior Consultant in Otolaryngology.

Dr. Albert J. Paquin, Jr., Associate Attending Surgeon and Associate Professor of Clinical Surgery (Urology), resigned on April 30 after 10 years of service beginning as a member of the resident staff, to become Professor and Chairman of the Department of Urology at the University of Virginia.

Dr. Frank Redo spent the last half of the year with Dr. Robert Gross at the Children's Medical Center in Boston prior to his becoming chief of the section on pediatric surgery.

Dr. Edward Goldsmith was advanced to Assistant Attending Surgeon and continues his research and clinical work in cardiovascular disease.

Dr. William Cooper, a former member of the house staff, has returned to be associated with the current investigation on pedestrian fatalities in New York.

Three residents completed their training in general surgery during the year. Dr. Henry Mannix, Jr., has continued in the department as an Instructor in Surgery, with his interests directed toward clinical and investigative problems in endocrinology and microbiology. Dr. Robert Spier became associated with the medical school at the University of Buffalo, where in addition to clinical practice he is conducting investigations in microbiology and tissue transplantation. Dr. George Johnson, Jr., entered surgical practice in North Carolina, where he is associated with the medical school at Chapel Hill.

SENIOR STAFF

Our assistants in the administration of the department have been Dr. Preston A. Wade, Dr. Peter Dineen, Dr. George Holswade, Dr. George Wantz, and Dr. Bjorn Thorbjarnarson. The attending surgeons in charge of the specialty sections have been:

Dr. Bronson S. Ray	*Neurosurgery*
Dr. John M. McLean	*Ophthalmology*
Dr. T. Campbell Thompson	*Orthopedics (Hospital for Special Surgery)*
Dr. James A. Moore	*Otolaryngology*
Dr. Herbert Conway	*Plastic Surgery*
Dr. Victor F. Marshall	*Urology*
Dr. Joseph F. Artusio, Jr	*Anesthesiology*
Dr. John M. Pearce	*Surgical Pathology*
Dr. George F. Egan	*Oral Surgery*
Dr. Cranston W. Holman	*Bellevue Hospital, 2nd Surgical Division*

Dr. Cranston Holman has been the director of the Second (Cornell) Surgical Division of Bellevue. He has been assisted by Dr. Joseph T. Kauer, Dr. Ernest Lampe, Dr. Eugene Cliffton, Dr. David Speer, and Dr. John H. Eckel.

In addition to the immediate members of the department, we have had assistance in teaching and clinical work from Dr. H. T. Randall of the Memorial Hospital and his immediate associates, Dr. Eugene Cliffton, Dr. Hollon Farr, and Dr. Walter Lawrence.

RESIDENT STAFF

The complete list of resident staff appointments in surgery for the year 1959 follows:

GENERAL SURGERY

Resident Surgeons

Henry Mannix, Jr.	May 1, 1958 to Apr. 30, 1959
George Johnson, Jr.	Sept. 1, 1958 to Aug. 31, 1959
William L. Craver	Jan. 1, 1959 to Dec. 31, 1959
Walter B. Hoover	May 1, 1959—
Charles W. Pearce	Sept. 1, 1959—

First Assistant Resident Surgeons

Walter B. Hoover	May 1, 1958 to Apr. 30, 1959
Charles W. Pearce	Sept. 1, 1958 to Aug. 31, 1959
Arthur J. Okinaka	Jan. 1, 1959 to Dec. 31, 1959
John C. Whitsell, II	May 1, 1959—
Peter M. Guida	Sept. 1, 1959—

Assistant Resident Surgeons

George H. Dietz	July 1, 1957 to June 30, 1959
Thomas M. Fulcher	July 1, 1957 to June 30, 1959
Frederick W. Fuller	July 1, 1955 to Dec. 31, 1959
Ernest Grable	July 1, 1957 to June 30, 1959
Peter M. Guida	July 1, 1955 to Aug. 31, 1959
Chester Z. Haverback	July 1, 1958 to June 30, 1959
Warren W. Koontz, Jr.	July 1, 1958 to June 30, 1959
Richard W. Martin	July 1, 1958 to June 30, 1959
Robert E. McCabe	Oct. 1, 1957 to June 30, 1959
Robert H. Stackpole	July 1, 1957 to June 30, 1959
John C. Whitsell, II	July 1, 1955 to Apr. 30, 1959
John F. Rose, Jr.	July 1, 1957 to June 30, 1959
Elliott Blinderman	July 1, 1959—
C. Elton Cahow, Jr.	July 1, 1958—
Edward J. Carey, Jr.	July 1, 1959—
Julius Conn, Jr.	July 1, 1958—
Armand F. Cortese	July 1, 1959—
Arnold G. Diethelm	July 1, 1959—
Joseph P. Dineen	July 1, 1956—
John P. Donohue	July 1, 1959—
Charles B. Dunaif	July 1, 1957—
Roger R. Ecker	July 1, 1958—
Ames L. Filippone	Aug. 16, 1956—
Charles F. Frey	July 1, 1959—

William R. Grafe	July 1, 1956—
Maury Hanson	July 1, 1959—
Eugene M. Lance	July 1, 1959—
Ralph J. Lewis	July 1, 1959—
George H. McLeod	July 1, 1959—
Charles K. McSherry	July 1, 1958—
Richard G. Middleton	July 1, 1959—
Frank G. Moody	July 1, 1957—
George P. Reading	July 1, 1958—
Edward M. Ring	July 1, 1957—
Waid Rogers	July 1, 1958—
Martin E. Rose	July 1, 1957—
John F. Tulenko	July 1, 1959—

Interns

July 1, 1958 to June 30, 1959	*July 1, 1959 to June 30, 1960*	
Edward J. Carey, Jr.	Carl M. Beiles	Harvard
Armand F. Cortese	Burton L. Berson	University of Rochester
Arnold G. Diethelm	Arthur R. Beil, Jr.	Cornell
John P. Donohue	Richard E. Boden	Harvard
Lawrence Dubin	Donald L. Bricker	Cornell
Eugene M. Lance	Larry C. Carey	Ohio State University
Ralph J. Lewis	Eric A. Hansen	University of California L. A.
George H. McLeod	Edward J. Law	State University of New York
Richard G. Middleton	Melvin G. Lund	Cornell
Daniel L. Moore	J. Bruce McGovern	Cornell
James M. Morris	J. William McRoberts	Cornell
Alan Pavel	St. Elmo Newton, III	University of Tennessee
Robert E. Shanahan	John M. Pitman, Jr.	University of Virginia
John F. Tulenko	James D. Prokop	Yale
Donald E. Willard, Jr.	Thomas H. White, Jr.	Duke
Norman R. Zinner		

Neurosurgery

Russel H. Patterson, Jr.	Resident	July 1, 1959—
	Assistant Resident	July 1, 1957 to June 30, 1959
David A. Eaton	Assistant Resident	July 1, 1958—
William S. Owen	Assistant Resident	July 1, 1959—

Ophthalmology

Henry J. Kinosian	Resident	Jan. 1, 1959 to June 30, 1959
	Assistant Resident	Sept. 1, 1956 to Dec. 31, 1958
Ricardo E. Rengel	Resident	July 1, 1959 to Dec. 31, 1959
	Assistant Resident	July 1, 1957 to June 30, 1959
Miles A. Galin	Assistant Resident	Jan. 1, 1959 to June 30, 1959
Robert S. Perry	Assistant Resident	July 1, 1957 to Dec. 31, 1959
Andrew P. Ferry	Assistant Resident	July 1, 1958—
George B. Magruder	Assistant Resident	July 1, 1958—
David K. Berler	Assistant Resident	July 1, 1959—
Stanley L. Harris	Assistant Resident	July 1, 1959—

Oral Surgery

Stanton B. Fater	Resident	July 1, 1958 to June 30, 1959
	Intern	July 1, 1957 to June 30, 1958
Peter J. Montemarano	Resident	July 1, 1959—
	Intern	July 1, 1958 to June 30, 1959
Frank J. Karfes	Intern	July 1, 1958 to June 30, 1959
Roy P. Adams	Intern	July 1, 1959—
Donald M. Seifert	Intern	July 1, 1959—

Otolaryngology

John H. Per-Lee, Resident	July 1, 1958 to June 30, 1959
Assistant Resident	July 1, 1957 to June 30, 1958
Milton Greenberg, Resident	July 1, 1959—
Assistant Resident	July 1, 1957 to June 30, 1959
Howard W. Lowery, Assistant Resident	Mar. 1, 1958—
Shigeru Yamashita, Assistant Resident	July 1, 1958 to June 30, 1959
Pierre Paul Gagnon, Assistant Resident	July 1, 1959—
Raynald Lavoie, Assistant Resident	July 1, 1959—

Plastic Surgery

C. Hal Chaplin, Resident	July 1, 1958 to June 30, 1959
Assistant Resident	Sept. 1, 1957 to June 30, 1958
Dicran Goulian, Jr., Resident	July 1, 1959—
Assistant Resident	July 1, 1958 to June 30, 1959
John H. Hayes, Assistant Resident	July 1, 1958—

Urology

Lester D. Shultis, Resident	July 1, 1958 to June 30, 1959
Assistant Resident	July 1, 1955 to June 30, 1958
Thomas J. Ferraro, Resident	July 1, 1959—
Assistant Resident	July 1, 1957 to June 30, 1959
John G. Keuhnelian, Assistant Resident	July 1, 1957—
Myron P. Walzak, Assistant Resident	July 1, 1958—
Rafael J. Gosalbez, Assistant Resident	July 1, 1958 to June 30, 1959
Paul W. Johenning, Assistant Resident	July 1, 1959—
John F. Rose, Jr., Assistant Resident	July 1, 1959—
John R. Woodard, Assistant Resident	July 1, 1959—

SERVICES, SECTIONS, ADMISSIONS, OPERATIONS, AND DEATHS—1959

			Deaths			Autopsies		
Pavilion Service	*Admissions*	*Operations*	*Oper.*	*Non-Op.*	*Total*	*Yes*	*Per Cent*	*No*
General Surgery	1,895	2,233	61	9	70	53 (10 M.E.)*	75.7	17 (1 M.E.)
Fracture	235	194	2	—	2	2 (2 M.E.)	100.0	—
Neurosurgery	244	366	13	—	13	11 (1 M.E.)	84.6	2
Ophthalmology	397	385	—	—	—	—	—	—
Oral Surgery	68	67	—	—	—	—	—	—
Otolaryngology	632	441	—	1	1	—	0.0	1
Plastic Surgery	316	429	—	—	—	—	—	—
Urology	664	553	12	2	14	8	57.1	6 (1 M.E.)
	4,451	4,668	88	12	100	74 (13 M.E.)	74.0	26 (2 M.E.)
Private Service								
General Surgery	2,262	2,312	52	20	72	51 (3 M.E.)	70.8	21
Fracture	265	195	5	—	5	4 (2 M.E.)	80.0	1
Neurosurgery	341	446	21	2	23	15 (3 M.E.)	65.2	8
Ophthalmology	496	494	—	—	—	—	—	—
Oral Surgery	54	53	—	—	—	—	—	—
Otolaryngology	864	724	—	—	—	—	—	—
Plastic Surgery	439	471	1	1	2	2 (1 M.E.)	100.0	—
Urology	1,041	742	9	8	17	7 (1 M.E.)	41.2	10 (2 M.E.)
	5,762	5,437	88	31	119	79 (10 M.E.)	66.4	40 (2 M.E.)
Semiprivate Teaching Service								
	923	845	20	6	26	19 (2 M.E.)	73.1	7
Totals	11,136	10,950	196	49	245	172 (25 M.E.)	70.2	73 (4 M.E.)

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* 10 Medical Examiner's cases included in the total of 53 autopsies.

GENERAL SURGERY

In 1959 the general surgical pavilions had 1,895 admissions. This represented a slight decrease when compared with 1958, when 1,950 patients were admitted. There were 2,233 operations performed with 61 deaths, a mortality rate of 2.7 per cent. In 47, or 77.0 per cent, autopsies were performed. In addition 9 non-operative deaths occurred and autopsies were performed in 6 of these. The semiprivate teaching service received 923 admissions and performed 845 operations. Postoperative deaths numbered 20 and 15 autopsies were performed. There were 6 non-operative deaths with 4 autopsies. Private patients admitted during the year numbered 2,262. Two thousand, three hundred and twelve operations were performed, and were followed by 52 deaths, an operative mortality of 2.2 per cent. Autopsies were performed in 39 of these, or 75.0 per cent. There were an additional 20 non-operative deaths with 12 autopsies.

The expansion of the program of cardiac surgery has been most notable during 1959. At the same time, the scope of cancer therapy has been increased. Methods for the control and prevention of cross-infection in surgical patients have continued to be studied, both in the operating rooms and in other patient areas. The surgical staff has continued to be confronted with complex referral problems requiring thorough diagnostic evaluation and judicious therapeutic measures.

Cardiovascular Surgery. Open heart operations with the use of the pump-oxygenator are now well established in the surgical armamentarium of the hospital. The number of patients who have been subjected to such operations passed the 100 mark in the latter half of the year, thus constituting the largest series in this city. Both congenital and acquired cardiac lesions have been treated with increasing success. The most frequently encountered patients suitable for open cardiotomy have been those with communications between the chambers of the heart. In addition, particular success has been achieved where stenosis of the aortic valve has been attacked. The successful progress of the program has been founded on the teamwork of a group who are devoted to the evaluation and preparation of the patients for operation. The integration of efforts has been carried effectively into the postoperative period. Surgical therapy has been conducted by Dr. Frank Glenn, Dr. George Holswade, Dr. Frank Redo and Dr. Edward Goldsmith. They have been given the strong support of Dr. Harold Stewart and his associates from the Department of Medicine, Dr. Mary Allen Engle and Dr. Henry Goldberg and staff from the Department of Pediatrics, Dr. Daniel Lukas and his colleagues of the cardiopulmonary laboratory, Dr. Joseph Artusio and Dr. Benjamin Marbury from the Department of Anesthesiology, Dr. Israel Steinberg and Dr. Nathaniel

Finby of the Department of Radiology, and Dr. Curtis Mendelson from the Department of Obstetrics. Special credit should be given the hospital blood bank and the Central Laboratories, for only through the splendid cooperation of Dr. Aaron Kellner, Miss Jane Haber and Dr. Robert Hirsch has the open heart program moved smoothly ahead.

Interest in operations for cardiac abnormalities not requiring the use of the pump-oxygenator has continued. Operations for coarctation of the aorta, tetralogy of Fallot, mitral stenosis and patent ductus arteriosus are examples. These have been corrected with increased safety. Mitral valvulotomy has been performed more than 460 times. A detailed report of the experience with the first 300 of these operations was the subject of a monograph published in August by Dr. Frank Glenn and Dr. Harold Stewart.

Dr. S. W. Moore and Dr. George Wantz have directed the surgical treatment of aneurysms and occlusive disease of the major arteries. During this year, they have utilized synthetic prostheses to replace diseased arteries or to by-pass occluded portions of the vascular tree. The surgical approach to aneurysms of the aorta has been expanded to include the thoracic portion as well as the abdominal. The long-term evaluation of the various types of vascular replacement has continued to be an important part of the study.

Cancer. The study of therapeutic measures for cancer has been accelerated. The adjuvant cancer chemotherapy program, carried out in cooperation with the United States Public Health Service, is designed to study the effect of the administration of certain chemotherapeutic agents in the prevention of the dissemination of cancer cells in conjunction with the surgical excision of carcinoma of the stomach, colon, and breast. Treatment of patients with advanced neoplastic disease has also been instituted. Those patients with cancer which is not amenable to the usual methods of surgery or radiation have been given chemotherapy in an effort to retard the progress of their disease. Because of their toxicity, the use of these agents has required close supervision, but the results have stimulated an expansion of the program. These investigations have been conducted by Dr. John Beal, Dr. George Cornell and their associates.

The treatment of malignant neoplasms of the stomach has continued to be a field of special interest. A review by Dr. Beal of the experience with interposition of a segment of jejunum between the esophagus and duodenum after total gastrectomy has demonstrated that this procedure can be accomplished with a low operative mortality and with a gratifying improvement in gastrointestinal function. Dr. Bjorn Thorbjarnarson, Dr.

John Pearce and Dr. Beal completed a review of the treatment of sarcom of the stomach.

The Tumor Registry under the supervision of Dr. George Cornell has continued to function effectively. It acts to assure and facilitate the follow-up and continued care of patients with neoplastic disease, to gather and make readily available statistical information regarding the hospital's experience with neoplastic disease, to increase the staff's awareness of the problems presented by cancer in its various forms, and to stimulate study and research in clinical oncology.

Trauma and Fracture. Dr. Preston A. Wade and Dr. Robert L. Patterson have continued to direct studies of injured patients. They have been ably assisted by Dr. Paul Skudder, Surgeon to the Emergency Department, and by members of the resident staff.

Dr. Paul W. Braunstein resigned from active participation on the service to enter private practice in Bay Shore, Long Island. He continues to assist in teaching and is associated with Dr. John W. Draper in an experimental study of the effect of transplanted bladder mucosa on bone formation. Dr. Howard Balensweig, Dr. Rolla Campbell, and Dr. Paul Harvey have participated in the supervision of the fracture service and in student instruction.

The fourth annual postgraduate course in trauma was given under the auspices of Cornell University Medical College in June. The course included fifty lecture sessions by members of the staffs of The New York Hospital, Cornell University Medical College and the Hospital for Special Surgery. The course was attended by 93 surgeons, including visitors from foreign countries.

The weekly fracture conferences on Tuesday evenings continue to be popular and are valuable teaching sessions. Attendance at these sessions has averaged over 40.

The emergency room study, authorized and supported by the Joint Action Committee of the American College of Surgeons, the National Safety Council, and the American Association for the Surgery of Trauma, is being continued at Cornell University Medical College under the direction of Dr. James R. McCarroll of the Department of Preventive Medicine and Public Health. Under the same auspices, pedestrian fatalities have been studied by Dr. William Cooper in conjunction with the New York City Police Department and the Medical Examiner's Office. This investigation has been expanded to include non-fatal pedestrian injuries.

Drs. Wade, Campbell, Philip Wilson, Jr., and Mason presented a study of "Replacement Prostheses in Femoral Neck Fractures" at the American

Association for the Surgery of Trauma. Dr. Wade also presented a paper on "Cup Arthroplasty for Intrapelvic Hip Dislocations". Drs. Braunstein and Draper made a preliminary report on "The Effect of Transplanted Bladder Mucosa on the Formation of Bone".

NEUROSURGERY

Dr. Bronson S. Ray, Attending Surgeon in Charge

Dr. Ray has been assisted during the year by Dr. Herbert Parsons, Associate Attending Surgeon (Neurosurgery) and Dr. Howard S. Dunbar, Assistant Attending Surgeon (Neurosurgery). Dr. Edward P. Ryan finished his residency training June 30. Dr. Russel H. Patterson, Jr. became chief resident July 1. Dr. David A. Eaton and Dr. William S. Owen were assistant residents.

Admissions to the Neurosurgical Service in 1959 totalled 585 patients, which may be compared to 637 in 1958. Operative procedures performed on 527 patients totalled 812. There were 34 postoperative deaths, an operative mortality of 4.2 per cent. Permission was granted for 25 autopsies, or 73.5 per cent.

Studies of the effects of removal of the pituitary gland have continued to be a field of major interest. We have been able to produce beneficial effects in certain patients with diabetes by removing the pituitary gland. One-half of the patients studied had been diabetics since early childhood and were threatened with loss of vision and renal failure. The ages ranged from 22 to 39. In each case, following removal of the pituitary gland, there has been some measurable benefit in arresting or slowing of the advancing retinopathy, as well as reduction or elimination of the need for insulin. In older patients the effect has been less impressive. The study was an outgrowth of investigative work on research animals to determine the lipid mobilization effect of growth hormone in hypophysectomized juvenile diabetics and of the effects with hypophysectomy performed in some 400 patients for metastatic carcinoma of the breast, some of whom were also diabetics.

A new anesthetic agent, Methoxyflurane, was introduced for neurological surgery during the year. It has been used in approximately 100 cases to date without untoward effects. The principal advantage of this agent is the combination of the favorable physiological conditions of diethyl ether anesthesia with a complete lack of flammability, thereby eliminating the potential hazards of explosion.

Investigation of surgical ablation of the hypophysis for mammary carcinoma has continued. This procedure has now been carried out on approximately 385 patients. An evaluation of the first 343 cases on

November 1 showed that 144 patients had obtained an objective remission. One hundred and twenty-three of these demonstrated regression of their disease and 21 were classified as having had an arrest. The operative mortality was 6.6 per cent.

A cooperative study with the Cornell Division of Neurology at Bellevue on aneurysms and subarachnoid hemorrhage under a joint grant from the National Institute of Health has been carried out. The relation of thyroid disease and function to the pituitary gland has received attention. This study has been conducted jointly with the Department of Medicine and a report will be presented at the meeting of the International Thyroid Society in London on July 5, 1960.

Localization of intracranial tumors with radioactive iodine has been utilized. Investigation has been made of destructive lesions in the globus pallidus. A study to determine the value of early arteriography in cerebrovascular accidents is in progress and the value of anticoagulant therapy in cerebral thrombosis is being assessed.

OPHTHALMOLOGY

Dr. John M. McLean, Attending Surgeon in Charge

Dr. McLean has had as his immediate associate throughout the year Dr. Edward A. Dunlap. Following a major illness, Dr. Stuart S. Snyder relinquished his duties to enter private practice. He continues on the attending staff. Dr. Miles A. Galin completed his residency in June and was appointed Surgeon to Outpatients. Dr. Henry J. Kinosian completed his residency and entered practice in Ogdensburg, New York. Dr. Robert Perry and Dr. Ricardo Rengel were appointed senior residents. Dr. Andrew Ferry, Dr. Brock Magruder, Dr. David Berler and Dr. Stanley Harris (having completed a two year tour of duty with the Air Force) now are assistant residents. Dr. Irvin Taylor, from the Massachusetts Eye and Ear Infirmary, and Dr. Ira Kaufman who returned from active duty with the Navy, became Surgeons to Outpatients.

Throughout the year Dr. Galin, Dr. Aizawa and Dr. McLean have continued their extensive studies on intraocular fluid balance, intraocular fluid flow, and intraocular pressure relationships. One of the byproducts of these studies has been the development of intravenous and oral urea as a valuable therapeutic agent in glaucoma. This form of therapy has virtually abolished the hazardous emergency operative management of acute glaucoma, thus making possible much safer elective surgery after the acute emergency has been managed in this fashion. A series of patients have been so treated without a single failure or serious complication. This form of treatment is also applicable as an adjunct in reducing certain complications in detached retina surgery, and is under study as a possible treatment in certain of the intraocular vascular accidents.

Dr. Donald Shafer has been most helpful in making available to our patients the photo-coagulation equipment under his direction at Manhattan Eye, Ear and Throat Hospital. In this way our therapeutic approach to certain types of detached retinas and intraocular tumors has been widened. Dr. Gordon's Low Vision Clinic continues to perform a very important service in visual rehabilitation of the near blind who cannot be aided by medical or surgical means.

This year has again been a busy one. The pavilion service had 397 admissions, and 385 operations without a death. There were 496 admissions to the private service, and 494 operations also without fatality.

ORTHOPEDICS

DR. T. CAMPBELL THOMPSON, Attending Surgeon in Charge

The treatment of orthopedic conditions and rheumatic diseases has been continued at the Hospital for Special Surgery. Special clinics include those for the treatment of cerebral palsy, club feet, scoliosis, amputations and metabolic bone diseases.

The resident training program has been extended to a total of three and one-half years. A period of two months is now included for experience on the Bone Tumor Service at Memorial Hospital. Two residents spend an additional six months as Senior Orthopedic Fellows. During this time, each is responsible for orthopedic consultations and presentation of cases at surgical grand rounds among their other duties on the orthopedic service.

The Caspary Research Building, which will be directed by the Philip D. Wilson Research Foundation, has been almost completed. This building, which connects to the Hospital for Special Surgery with a second floor bridge over the street, will provide three floors of research laboratories as well as a floor for clinical expansion. The excellent laboratories and animal quarters will provide an optimum environment for research activities in the field of orthopedic surgery.

Three issues of the Bulletin of the Hospital for Special Surgery appeared during 1959. Each number carried several clinical papers and a report of a research project. The Bulletin has attracted favorable notice, and more than 500 requests have been received from libraries and medical schools.

OTOLARYNGOLOGY

Dr. James A. Moore, Attending Surgeon in Charge

Dr. Moore has had the able assistance of a senior staff of 13 and a resident staff of 4. Dr. John Per-Lee completed his residency June 30 and entered the military service with the United States Navy on July 1. Dr. Milton Greenberg became resident surgeon July 1, and Dr. Howard Lowery was promoted to second year assistant resident. Dr. Pierre-Paul Gagnon and Dr. Raynald Lavoie have been appointed first year assistant residents.

Dr. Gervais McAuliffe resigned his teaching commitments December 1 because of illness. His resignation has been accepted with regret and he has been appointed Senior Consultant to the section. Dr. John Williams resigned June 30 to accept an appointment as Chief of Otolaryngology at the Grasslands Hospital in Westchester County.

During the year the total number of surgical procedures performed was slightly less than in 1958. Two laryngectomies and three radical neck dissections were done. Modified radical and radical mastoidectomies numbered 11. Fifty-five operations for mobilization of the stapes were carried out. Caldwell-Luc procedures or radical sinusotomies were carried out in 27 patients, simple sinusotomies in 3. Seventeen rhinoplasties were performed. Thirty tracheotomies, most of these as emergencies, were performed. Five hundred and eighty-one tonsillectomies and/or adenoidectomies and 108 routine septectomies were performed. The number of operations totalled 1,165.

The case load of the Speech and Hearing Center increased slightly during the past year. The center continues to cooperate with the State of New York Department of Health, Bureau of Medical Rehabilitation and Bureau for Handicapped Children. Approximately 50 hard-of-hearing children are being followed in the Speech and Hearing Center in conjunction with the State conservation of health program.

PLASTIC SURGERY

Dr. Herbert Conway, Attending Surgeon in Charge

Dr. Conway has had the able assistance of Dr. James Smith and Dr. Merton Griswold during the past year. Dr. Smith was granted a leave of absence during the first six months in order to obtain additional training in surgery of the hand with Dr. Joseph Boyes in Los Angeles. Dr. Griswold has continued to participate actively in the Out-Patient Department. Dr. C. Hal Chaplin completed his resident training June 30. Dr. Dicran Goulian became resident surgeon in Plastic Surgery July 1. Dr. Harry Hayes was appointed assistant resident surgeon (plastic surgery) on July 1.

Research activities have had the excellent assistance of Ronald Gillette, Ph.D., Dr. David Connelly and Miss Angelica Findley.

The clinic load was heavy during the past year. Although the 316 admissions to the pavilion service represented a slight decrease from the 354 of 1958, the number of operations increased from 375 to 429. There was one death after operation. The out-patient clinic had 1,959 visits, which represents an increase of approximately 15 per cent.

The service has continued to function as an approved Cleft Palate Center for the Health Department of the City of New York. A monthly cleft palate conference has been successful in providing comprehensive care for cleft palate patients.

Honors were received for work conducted in the division of plastic surgery during the past year. Dr. Philip Corso of the resident staff received second prize in an international essay contest conducted annually by the Foundation of the American Society of Plastic and Reconstructive Surgery for a thesis entitled "Variations of the Arterial, Venous and Capillary Circulation of the Soft Tissues of the Head by Decades as Demonstrated by Methyl Methacrylate Injection Technique and their Application to the Construction of Flaps and Pedicles". Dr. Smith was awarded honorable mention for his paper, "The Anatomic and Physiologic Acclimatization of Tissue Transplanted by the Lip Switch Technique".

A five year clinical and laboratory study on keloids has been completed and it is believed to be a significant contribution. Through tissue culture, a laboratory test has been developed which will demonstrate accurately the differentiation of keloids, hypertrophic scars and mature scars.

Clinical investigation and out-patient care for speech therapy and orthodontics has been extended through the generous support of the Astor Foundation. Support in this field has also been provided by The New York Society for Crippled Children and Adults.

UROLOGY

Dr. Victor F. Marshall, Attending Surgeon in Charge

Dr. Marshall has had Dr. John H. McGovern as his immediate associate during 1959. Dr. Albert J. Paquin, Jr. resigned in April to accept the position as Professor and Chairman of the Department of Urology at the University of Virginia.

Dr. Lester Shultis completed his residency training June 30 and entered private practice in Canton, Ohio. Dr. Thomas Ferraro assumed the position of chief resident July 1, and Drs. John Woodard, Paul Johenning and John Rose were appointed assistant resident surgeons.

Urological disorders in children have continued to be a major activity of our service. In the past few years more than a dozen papers have been published in the field of pediatric urology, and several studies are currently under way. A review of the pediatric urological admissions through 1958 was completed by Dr. McGovern this spring. Follow-up data have been completed on most of these patients, providing a tangible back-log of experience upon which to base the management of future children. Dr. Walzak, assistant resident, is engaged in the study of the pressures in the urinary tracts of children with various anomalies. Dr. Rose is making a study on the natural history of the urinary tract in children with neurogenic bladders resulting from myelomeningocele. With the essential help of Dr. Biern's laboratory at the Rockefeller Institute, studies of the chromosomal pattern of two true hermaphrodites nears completion. Dr. Johenning has been investigating the possibility of reflux up the female urethra, particularly in children. Evaluation of the treatment of the megacystitis syndrome and vesicoureteral reflux in children is continuing, and papers on those subjects will be published shortly in the Journal of Urology. Our new technique for the functional closure of exstrophy of the bladder was employed during the year with hopeful results, but it is not possible to give a full evaluation of the method since further follow-up will be necessary. A study of renal calculous disease with Dr. Melvin Horwith of the Metabolic Division of the Department of Medicine has been arranged. During the course of 1959 an intensive study was made of oxalosis in children.

Dr. Myron Walzak, assistant resident, has instituted a study of renal artery disease, particularly as related to hypertension. Dr. Israel Steinberg of the Department of Radiology has generously agreed to help with this study and has given Dr. Walzak instruction in the technique of intravenous aortography. With the generous cooperation of the Department of Pathology, Dr. Keuhnelian, assistant resident, is completing a study of the causes of fatal uremia. Particular emphasis is being placed upon those cases in which the clinician's diagnosis and the pathologist's diagnosis are not the same, in an attempt to determine what diagnostic procedures might have been valuable in providing the correct diagnosis before death.

Dr. Willet F. Whitmore became president of the Section of Genitourinary Surgery of the New York Academy of Medicine. Dr. John W. Draper is president of the New York Section of the American Urological Association, Inc.; Dr. George Fiedler is treasurer and Dr. Marshall secretary of that organization.

ANESTHESIOLOGY

Dr. Joseph F. Artusio, Jr., Anesthesiologist in Chief

The Department of Anesthesiology in its second full year as a separate department in the hospital has continued to cooperate closely with the Department of Surgery, and its service activities, teaching and research have increased in scope.

Dr. Artusio has been assisted by nine attending anesthesiologists, which is the largest group to date. Dr. Marbury continues to supervise the anesthesias given to patients in the Department of Obstetrics and Gynecology. Dr. Valentino D. B. Mazzia has directed the clinical anesthesia and has as one of his responsibilities the guidance of the didactic residency training program. Dr. Marjorie J. Topkins is responsible for the administrative management of our nurse anesthetists. Dr. Robert I. Schrier has been placed in charge of all the equipment and Dr. Alan Van Poznak of the research program.

Dr. Manfred Alexander, Dr. Gerald J. Millstein and Dr. Francis M. Tiers, having finished their residency training programs on July 1, became assistant attending anesthesiologists. Dr. Claire Schehr finished her residency on August 19, 1959 and left to assume a position in anesthesiology at The Huntington Hospital in Huntington, Long Island.

Dr. Anita Goulet, who had been an assistant attending anesthesiologist for the past four years, resigned June 30 to take a position at Memorial Hospital, New York City.

The research activity of this department has culminated in the development of a new fluorinated ether for clinical anesthesia. Following the experimental investigation of many halogenated ethers and hydrocarbons, one agent that appeared to be an ideal anesthetic agent suitable for clinical use was found. This was 1, 1, dichloro 2, 2, difluoro methyl ethyl ether (Methoxyflurane). It has now been successfully administered to 200 patients of our hospital and is undergoing a limited clinical investigation throughout the country.

All anesthetics given in this institution are now recorded by I.B.M. statistical system. This very effective recording and statistical system also is being employed for teaching and research.

The summary of principal anesthetics and techniques is listed as follows:

Cyclopropane	3,744	
Ether—closed circle	1,927	
Ether—open	1,093	
Nitrous Oxide	1,600	
Rectal Pentothal	38	
I. V. Pentothal	62	
Trilene (Trichlorethylene)	5	
Vinethene	24	
Regional block for surgery	40	
Spinal	109	
Caudal	1	
Refrigeration	1	
		8,644
Locals O. R.	2,887	
Blocks R. R. (Therapeutic and Diagnostic)	34	
Locals Clinic	391	
Blocks Clinic	3	
Adjuvants—electroshock therapy	171	
		3,486
Total		12,130
Private Patients	7,035	
Pavilion Patients	5,095	
		12,130

SURGICAL PATHOLOGY

Dr. John M. Pearce, Surgical Pathologist

Dr. Pearce has had the valuable assistance of Dr. Erie Pike from the Department of Pathology in directing the activities of the laboratory for surgical pathology.

The number of surgical specimens processed by the diagnostic laboratory numbered 9,337 during 1959, in contrast with a total of 9,434 in 1958. Malignant neoplasms accounted for slightly over 20 per cent of the total number of diagnoses. The demands upon the laboratory for frozen section examination of specimens at the time of operation have progressively increased. During the past year 581 frozen sections were performed. In addition, the laboratory has provided support to the surgical program by photographing clinical problems in the operating room and surgical specimens in the laboratory. A total of 702 pictures were taken in 1959.

Training in surgical pathology has been afforded for surgical interns and for members of the resident staffs of general surgery, otolaryngology, radiology and pathology. Two medical students spent elective periods in the laboratory for additional experience in surgical pathology.

The addition of another technician to the staff has greatly furthered the research activities of the various sections which require histologic study in their investigations. Approximately 1,600 slides were processed for experimental studies during the past year.

Research activities in the laboratory have been of both a clinical and experimental nature. Clinical pathologic studies of neoplasia of the stomach were carried out and reported in two papers. Retroperitoneal fibrosis was the subject of another study which also was published. In the experimental laboratory, the studies of the role of antihyaluronidase in the prevention of viral diseases and the production of immunity are continuing and broadening. Emphasis has been placed on the myxomatosis group of virus tumors. The investigations of experimental viral myocarditis with production of experimental chronic congestive heart failure is now in its third year of support from the New York Heart Association. The possibility of the viral etiology of neoplasia with especial reference to pulmonary adenomatosis is also under scrutiny. The surgical small animal room continues to increase in activity and is providing care for increased numbers of animals.

OPERATING ROOMS

Miss Dorothy Ellison, R.N., Head of Operating Room Nursing Service

Miss Ellison has the following staff for direction of the operating room activities:

Mrs. Lucy Hickey, Supervisor of the Private Operating Room
Miss Gladys Jones, Supervisor of the Recovery Room
Miss Anna Ondovchick, Supervisor of the Teaching Program

Operations and treatments during 1959 totalled 17,799 in comparison to 17,307 for 1958. During the summer and early fall months, a critical shortage of nursing staff curtailed utilization of the operating rooms. The volume of surgical procedures that was carried out is a tribute to the untiring efforts of a loyal nursing staff and to the cooperation of the surgical staff.

The resignation of Miss Lena Saffioti from the position of supervisor of the general operating rooms was accepted with regret. Miss Saffioti had contributed greatly to the efficiency of the operating rooms through a period in which the nursing staff had fluctuated greatly in numbers.

Operating Room Committee

Members: Dr. John M. Beal, Chairman. Miss Dorothy Ellison, Secretary, Dr. Joseph Artusio, Dr. Peter Dineen, Dr. John McGovern, Dr. William Sweeney, Dr. Philip Wilson, Jr., Miss Lydia Hansen, Mr. Normand Girard, Dr. August Groeschel, Mr. James O'Connell, Mr. William Walton.

The Operating Room Committee, which recommends policies to the Medical Board has been particularly cognizant of the need for maintaining high standards of efficiency and cleanliness in the operating rooms. This was emphasized during the past year by the nursing staff shortage. Dr. Peter Dineen, with the assistance of Dr. Henry Mannix and Dr. Frank Redo, and Miss Ellison have carried out frequent inspections of the operating rooms and have received the cooperation of Mr. O'Connell and his staff. These inspection tours have materially aided in achieving a high level of cleanliness and maintenance in the operating rooms. The result has been reflected in the continued low rate of infection in surgical patients in the hospital. In addition, study by the Operating Room Committee led to the introduction of sponge counts in major operations in order to achieve greater safety for the patient. The impregnation of caps, masks, shoes and clothing with antiseptic agents has been expanded. An improved agent, Betadine, for skin preparation was introduced this year. The acquisition of an ethylene oxide sterilizer has further reduced the use of wet sterilization for materials that are not suitable for autoclaving. In cooperation with the hospital administration, installation of oxygen, nitrous oxide and suction from a central source has proceeded. Methods for renovation of the operating rooms are being studied at present.

LABORATORIES FOR SURGICAL RESEARCH

The laboratories for surgical reserach function to provide assistance for clinical problems and studies and to conduct investigations in basic research in the field of surgery. The number of participants in research projects has increased, and new areas of investigation have been added. Dr. John Beal has had the responsibility for direction of the research activities. Dr. Henry Mannix has participated actively in the laboratory, particularly in the field of surgical bacteriology.

Surgical Metabolism. The direction of biochemical procedures by Dr. Helena Gilder has continued. Studies of changes in body composition after major operation have been of particular interest to the staff, and measurement of changes in body fat has been emphasized. Patients in the older age groups, as well as those who are malnourished, have been studied. The effect of administration of adequate caloric and nitrogen intake in the postoperative period continues to receive attention. The experience over the past five years is now the subject of analysis, and an impressive number of metabolic balance studies during this period enhances the value of the accumulated data. Dr. Gilder continued the studies of fluid and electrolyte exchange between the body compartments. These investigations have been expanded to include a study of a new group of compounds that have been reported to antagonize the effects of aldosterone.

The study of absorption after various gastrointestinal operations has been increased. Patients with total gastrectomy, pancreatic insufficiency, and ileostomy have been subjected to balance studies. Dr. George Cornell and Dr. Beal have directed these investigations with the assistance of Dr. Frank Moody, Dr. Edward Ring, Dr. Charles McSherry and Dr. William Grafe.

Patients with debilitating diseases and with major field and electrolyte problems have received special assistance from the metabolic section of the laboratory. Determinations of urinary electrolyte excretion and blood volume have been helpful in the assessment and correction of fluid deficits in patients with obstructing lesions of the intestinal tract and in others with serious losses of fluids from gastrointestinal fistulae. The provision of special high caloric-high protein formula feedings by the metabolic dietitian has been of significance in the correction of serious nutritional problems in a number of patients. Miss Arlene Rosenwasser replaced Mrs. Ames Filippone as metabolic dietitian in November. Mrs. Filippone contributed greatly to the program and aided materially in the standardization of formula composition prior to her resignation.

The Vincent Astor Foundation has continued its generous support to the cardiovascular work and the metabolic section. Assistance for this work has also been received from the Lillia Babbitt Hyde Foundation.

Cardiovascular Research. The success of the clinical application of the pump-oxygenator in open heart operations on patients has been based on experience gained in the laboratory under the direction of Dr. Frank Glenn and Dr. George Holswade. As clinical experience increases, improvements in techniques, both technical and functional, continue to be sought in the laboratory. Efforts are being made to further improve the efficiency and safety of the pump-oxygenator. Dr. Holswade and Dr. Edward Goldsmith have been investigating profound hypothermia by means of a heat exchange unit. They are assessing the possibility of permitting open heart surgery in a state of suspended animation through the employment of this mechanism. An approach to direct surgery on the aortic valve by the use of forward perfusion of the coronary arteries is being evaluated by Dr. Holswade and Dr. Goldsmith. These investigators, with the assistance of Dr. Mary Allen Engle of the Department of Pediatrics, have been investigating the experimental correction of transposition of the great vessels by internal and external shunting of the venous return.

Dr. Frank Redo has continued investigation of basic cardiac physiology using an isolated perfused heart preparation. An evaluation of the effects of prolonged periods of cardioplegia with various methods of production of cardiac arrest is nearing completion. The results have indicated that the longer the heart is arrested, the poorer is the degree of maximum recovery.

Dr. Edward Goldsmith, in cooperation with Dr. Nathaniel Finby of the Department of Radiology, has continued the study of retrograde aortography for visualization of the coronary artery circulation and abnormalities of the aortic arch. The techniques developed in the laboratory have now been applied to clinical problems, and this method appears to have considerable promise in the elucidation of obscure problems in certain abnormalities about the base of the heart.

Gastrointestinal Research. Dr. William Barnes and Dr. Frank Redo have continued the work on the isolation and identification of an inhibitor of pepsin activity which is recoverable from gastric juice. Using electrophoretic and chromatographic techniques, the amino-acid constitution of the inhibiting substance is being analyzed. The amount of pepsin inhibition is determined by radioactive iodinated serum albumin and egg-albumin digestion methods. The preliminary results of these studies were presented at the Surgical Forum of the American College of Surgeons in October.

Dr. Barnes and Dr. Redo are also continuing their interest in the prevention of reflux esophagitis. A method of esophago-gastrostomy by the creation of a submuscular tunnel in the wall of the stomach was developed in the laboratory, and during the past year was applied successfully in five patients.

The study of experimental peptic ulceration has been continued by Dr. Beal with the cooperation of Dr. Kirby Martin of the Department of Medicine. The effect of interposition of a segment of duodenum in various portions of the gastrointestinal tract has been investigated, and the effect of this procedure on gastric secretion has been studied. Changes in acid secretion have not correlated with the development of peptic ulceration in these experimental studies, and the mechanism of the action is now the subject of further investigation. Dr. Beal has continued to study the effect of stripping the gastric mucosa from the gastric wall. The possibility of replacement of the gastric mucosa by other types of epithelium has been the subject of continued study.

Surgical Bacteriology. Bacteriological studies in the surgical laboratories have been under the supervision of Dr. Peter Dineen, who has been assisted by Dr. Henry Mannix. A major field of interest has been an evaluation of the effectiveness of surgical scrubbing in preparation for operations. By means of an elaborate technique, Dr. Mannix has been determining the number of bacteria present on the hands and arms of surgeons both in the laboratory and in the operating rooms. New agents are being investigated in the hope of discovering one that is more effective and longer acting for the surgical scrub. Investigation has continued in reference to organ specificity of penicillin-resistant organisms. Because of the need for more accurate indentification of strains of staphylococci, a phage typing procedure has been established. The time-dose relationship study of staphylococcal infections continues. A study of wound infections in the department has made it possible to tabulate and record accurately the incidence of infections. It has also furnished support for appropriate improvements in technique on the clinical services.

Biliary Tract Research. Dr. Bjorn Thorbjarnarson has been responsible for the investigative activities in the field of biliary tract problems. Measurements of total biliary flow have been conducted on patients who have undergone surgery on the common duct. These studies have indicated so far that total biliary flow is dependent more on body weight than on other factors observed. In the laboratory, studies have been initiated to determine the individual role of the stomach and various parts of the small intestine in the evacuation of the gallbladder. These studies have been prompted by the observed and reported changes in gallbladder motility following gastric surgery in human beings. Also conducted in the laboratory have been studies on the anatomical changes that occur from trauma to the ampulla of Vater. These studies are pertinent to the common practice of dilatation of the lower end of the common duct during biliary tract surgery. The experiments have been performed on animals and consist of dilating the ampulla of Vater to at least three times its normal capacity. The animals have then been sacrificed at various intervals and the microscopic changes in the ampullary tissue correlated with the degree of trauma and time elapsed.

Further experiments are being conducted on the feasibility of autotransplantation of parts of the canine liver. These experiments aim at demonstrating anatomical and physiological survival of parts of liver tissue separated from the mother organ and deriving its nourishment from an artifically created blood supply.

Cancer Research. During the past two years, Dr. Beal and Dr. Cornell have been participating in study of the use of chemotherapeutic agents as adjuvants in the surgical treatment of carcinoma of the stomach, colon, and breast. This is part of a national cooperative investigation which is supported by the United States Public Health Service. In addition, patients with inoperable cancer have been given chemotherapeutic agents in an effort to halt the progress of the malignant neoplasm. The most promising drug employed thus far has been 5-Flourouracil. In both studies the laboratory has given valuable support in the ancillary studies that are required because of the inherent toxicity of the drugs. The implantation of tumor cells in the wound at the time of operation continues to be a problem that confronts surgeons. Recently a series of experiments has been undertaken to study the effectiveness of various agents in the prevention of this phenomenon.

Urologic Research. Under the direction of Dr. John Draper, two problems have been pursued in the surgical laboratories. The effect of bladder epithelium on bony defects has been investigated with the assistance of Dr. Braunstein, Dr. Sierp and Dr. Samellas. When bilateral defects are created in the ulnae, accelerated and exaggerated bony union has been demonstrated at the site of application of bladder epithelium, while the control site has been found to have non-union. Gallbladder epithelium has also been studied but does not have the properties of osteogenesis present in bladder epithelium. An exhibition of this work received honorable mention from the American Medical Association. At present biochemical studies are in progress in an attempt to isolate the osteogenic substance responsible for this effect. Renal hypertension is the subject of a new investigation. Experimental hypertension is produced by the insertion of a thrombogenic aluminum alloy in the renal arteries. Renal arteriograms and nephrograms by retrograde femoral catheterization of the aorta are employed. Methods for increasing blood flow to ischemic kidneys are being sought.

Miscellaneous. The plastic surgical research team has continued its interest in homoplasty of skin and endocrine organs by tissue chamber and tissue culture techniques. Studies of tissue culture characteristics of fibroblasts from scar tissue and keloids have been carried out.

The surgical research laboratory has continued to cooperate with the Department of Pharmacology in the preparation of experimental heart block for pharmacologic studies. The Department of Anesthesiology continued to study fluorinated ethers in the laboratory in support of the clinical application of the new agent introduced into clinical anesthesia this year.

ORAL SURGERY

Dr. George F. Egan, Attending Oral Surgeon in Charge

The Dental and Oral Surgery section was selected by the American Dental Association to demonstrate oral surgical procedures for the Centennial Anniversary Meeting. This was carried out by means of a three-hour, closed circuit television presentation which was witnessed by more than five hundred visitors in the surgical and medical college auditoriums. One kinescope of the presentation has been made into four one-half hour movies, which have been made available to other hospitals and dental societies.

The section also participated in the Scientific Session of the Centennial Meetings by means of two exhibits, including continuously run motion pictures and the reading of four papers.

Additional grants obtained for the Oral Surgery Research Fund enabled two clinical studies to be carried out. With the cooperation of the First District Dental Society, two courses were conducted in "Diagnosis and Principles of Oral Surgery". An additional course, "Implantation of Magnets in the Jaw", has been added to the schedule.

In order to fulfill completely the requirements for a residency in Oral Surgery, arrangements are being instituted to include the required didactic training. The plan is to extend the residency program from two to three years. A portion of the didactic training is to be obtained by attendance at selected classes in the medical college. Three months will be spent in Anesthesiology, one month in Surgical Pathology, and three months on the General Surgical pavilions.

OUTPATIENT DEPARTMENT

Dr. S. W. Moore, Attending Surgeon in Charge

In the Surgical Diagnostic Clinic, the Schiller test has been used as a screening test to detect carcinoma of the cervix, particularly carcinoma *in situ*. To date 453 women have had this test, and 63, or 14 per cent, showed positive results. Forty-four of these have been followed by Papanicolaou smear, biopsy, or both. Although no cancer has been found, several women have received suitable treatment in the Gynecological Clinic for chronic inflammatory conditions.

At present a study has been undertaken at the Strang Clinic to correlate negative Schiller tests with negative Papanicolaou smears.

A new motor-controlled proctoscopic table has been ordered. This should increase the accuracy of the procedure and diminish time spent in these examinations.

The Surgical Dressing Clinic receives, dresses, and cares for most staphylococcus infections from the hospital. Studies made by placing Petri dishes in various parts of the clinic show that of the bacteria present, staphylococci predominate. Glass ventilators are being installed in the windows to prevent some of the contamination from the outside.

Attendance at the special Fracture Sunday Follow-Up Clinic has increased greatly over previous years, and since all X-rays taken on follow-up patients have been done with clinic X-ray facilities, more complete follow-up records are available for clinical research. Photographic facilities now make these X-rays available for patients' records.

Many elderly patients, asked to return for treatment and follow-up examination, are bedridden or unable to walk unassisted and they are brought to the clinic by ambulance through cooperation with the Social Service Department.

In the Ophthalmology Clinic throughout the year Dr. Galin, Dr. Aizawa, and Dr. McLean have continued their extensive studies on intraocular fluid balance, intraocular fluid flow, and intraocular pressure relationships. One of the byproducts of these studies has been the development of intravenous and oral urea as a valuable therapeutic agent in glaucoma. This form of therapy has virtually abolished the hazardous emergency operative management of acute glaucoma, making possible much safer elective surgery after the acute emergency has been managed in this fashion. To date a fairly sizeable series of patients has been so treated without a single failure or serious complication. This form of treatment is also applicable as an adjunct in reducing certain complications in detached retina surgery, and is under study as a possible treatment in certain of the intraocular vascular accidents.

Dr. Donald Shafer has been most helpful in making available to our patients the photo-coagulation equipment under his direction at Manhattan Eye, Ear and Throat Hospital, since we do not yet possess such equipment. In this way our therapeutic approach to certain types of detached retinas and intraocular tumors has been widened.

Dr. Gordon's Low Vision Clinic continues to perform a very important service in visual rehabilitation of the near blind who cannot be aided by medical or surgical means.

In Otolaryngology weekly meetings are held each Monday evening for group voice therapy under the direction of Dr. Esti Freud. The bucco-esophageal voice is taught to laryngectomized patients by the group method.

In cooperation with the State of New York Department of Health, Bureau of Medical Rehabilitation and Bureau for Handicapped Children, approximately 50 hard-of-hearing children are being followed in conjunction with the State conservation of health program. These children receive complete audiological work-ups, and interdepartmental consultations are available. Monthly conferences are held and speech therapy is carried out in this group.

In the Speech and Hearing Center during the year 1959, 2,502 audiograms were done and there were 917 patient visits for speech therapy.

The Urological Out-Patient Service continued quite active throughout the year. In fact, the increase in number of radiographic examinations made necessary a new radiographic table. In addition, arrangements have been made for an additional dark room to be installed on the ninth floor cystoscopic unit. In cooperation with the Department of Radiology, the number of full-time urological X-ray technicians was increased to three.

Working with Dr. Diethelm and Dr. Robbins of the Department of Psychiatry, an attempt has been made to evaluate the use of hypnosis to facilitate the examination of children in the Out-Patient Department.

The Urological Service suffered a severe loss in the sudden death of Mrs. Charlotte Hanley in December. Mrs. Hanley had been the Chief Urological Laboratory Technician (with laboratory in the Out-Patient Department) since the opening of this hospital in 1932. Previously, she had been associated with the Cornell Clinic. Mrs. Hanley was exceptionally capable and gave valuable support in the management of both out-patients and in-patients.

Plastic Surgery. In conjunction with the section of orthopedics a project has been carried out to evaluate regeneration of neural elements in pedicled tissue by means of electromyography. In addition, sweat tests are being done as a means of following the regeneration of sympathetic neural elements in transplanted tissues.

In the last two years the total number of clinic visits has jumped from 1,533 to 1,959, and speech treatments from 256 to 615. One hundred and three operations were done in the emergency unit.

Nerve Block Clinic. This is the second year that the Department of Anesthesiology has provided for out-patients the services of a nerve block clinic on a referral basis. Various types of pain problems are referred here for therapy. Patients are seen by appointment by an anesthesiologist who, after appropriate investigation, performs a diagnostic or therapeutic nerve block. This clinic is supervised by Dr. Francis M. Tiers.

Emergency Unit. The Dr. Connie Guion Building, on which construction was started November 27, 1958, will provide greatly expanded and more efficient emergency facilities. Marked improvements in the new building will include X-ray facilities in the Emergency Unit; better visibility of patient areas; an intercommunication system between patient areas and doctors' and nurses' station; an increased number of examining and operating units; improved quarters for the house staff in the Emergency Unit, including quarters for the medical, as well as the surgical assistant resident on duty. The original plans call for the new facilities to be completed in the summer of 1960.

While construction has been in progress, Emergency Unit registrations have increased to an all-time high of 20,845. Admitted to the hospital via the Emergency Unit were 2,085 patients, representing 12 per cent of those registered. It is of special importance to notice that 30 per cent of the

General Surgical admissions and 40 per cent of the admissions to the Medical Department were admitted through the Emergency Unit. Of the total registrations, 5 per cent consisted of fractures and 27 per cent of soft tissue trauma, the two together making up 32 per cent of all registrations. During the year the number of transfers from other hospitals by ambulance has been gradually decreasing. The transfers are largely trauma and this probably represents an increasing interest in this field in other institutions.

In order to facilitate the indoctrination of new members of the house staff coming to the Emergency Unit, a manual has been prepared by representatives from the Departments of Surgery, Medicine, Pediatrics, Obstetrics and Gynecology, and Nursing, outlining the responsibilities of personnel assigned to and on call for the Emergency Unit.

In a Disaster Plan which has also been prepared, the Emergency Unit serves as the receiving triage area. The patients are then sent to previously designated areas in the hospital, where definitive care is begun for those requiring admission. For those not requiring admission, a separate area will be used. Treatment in the Emergency Unit will be held at an absolute minimum.

Surgical Follow-Up Clinic. The Surgical Follow-Up Clinic is fortunate in having three full-time workers who have been with it for some time. All material is up to date. There are 8,654 patients currently being followed in this section. During the year 749 cases were closed, including deaths, and 1,305 new cases were added. This shows an increase of 556 total patients being followed.

The Fracture Follow-Up continues to work to the satisfaction of all concerned. Four hundred and eighty-seven cases were brought forward from 1958, and at the close of 1959 there were 730 cases on file, representing an increase of 50 per cent of the number at the start of the year.

SPECIAL GRANTS AND DONATIONS FOR SURGICAL RESEARCH

U. S. Public Health Service:	
General Surgery	$ 91,461.00
Ophthalmology	19,440.00
Plastic Surgery	20,000.00
Neurosurgery	2,553.00
Department of the Army—Surgical Bacteriology	36,395.00
Vincent Astor Foundation:	
General Surgery	40,000.00
Plastic Surgery	7,000.00
Robert Sterling Clark Foundation—Cardiovascular Research	10,000.00
Bing Fund—Gastric Physiology	10,000.00
Lillia Babbitt Hyde Foundation:	
General Surgery	10,000.00
Urology	10,000.00

Mr. and Mrs. Leonard F. McCollum:	
Cardiovascular Research	8,189.75
Neurosurgery	8,189.75
Mrs. Grant Simmons—Plastic Surgery	9,672.37
New York City Cancer Committee—General Surgery	9,000.00
New York Heart Association—Cardiovascular Research	7,824.00
Mrs. George E. Vigouroux—Cardiovascular Research	5,000.00
National Society for Prevention of Blindness—Ophthalmology	5,000.00
Abbott Laboratories—Anesthesia	5,000.00
The John Polachek Foundation—Cardiovascular Research	3,630.00
Ottinger Foundation Inc.—Trauma	3,000.00
New York Society for Relief of Ruptured and Crippled—Trauma	3,000.00
Bristol Laboratories, Inc.—Surgical Bacteriology	2,500.00
Lasdon Foundation, Inc.—Urology	2,500.00
Victor Emanuel—Plastic Surgery	2,500.00
United Cerebral Palsy Fund—Ophthalmology	2,500.00
Marie Heye Clemens Fund—Orthopedic Surgery	2,500.00
F. W. Skogmo Charitable Trust—Orthopedic Surgery	2,500.00
B. C. Gamble Charitable Trust—Orthopedic Surgery	2,500.00
Mr. and Mrs. Rudy C. Stiefel—Trauma	2,050.64
Roy E. Larsen Fund—Tumor Registry	2,000.00
Mrs. Cyrus McCormick—Otolaryngology	2,000.00
Clay-Adams Inc.—Surgical Bacteriology	1,628.75
Sylvia Klein Memorial Fund—Cancer Research	1,282.00
John E. McAuliffe:	
Cardiovascular Research	1,000.00
Urology	1,000.00
Henry S. Sturgis—Cardiovascular Research	1,000.00
Wappler Foundation—Urology	1,000.00
Robert L. Werner—Biliary Tract Research	1,000.00
Herman O. Jaeger—Cardiovascular Research	1,000.00
Mrs. George W. Merck—Cardiovascular Research	1,000.00
Mrs. Philip L. James—Gastric Physiology	1,000.00
General Tire and Rubber Co.—Plastic Surgery	1,000.00
Buffalo Fund:	
Plastic Surgery	500.00
Trauma	500.00
John H. Krey—Otolaryngology	750.00
Nathan Dinion—Urology	750.00
Mr. and Mrs. Louis Resnick—Plastic Surgery	750.00
F. William Harder—Urology	728.78
Bertel W. Antell—Trauma	557.67
Daniel Dowd—Ophthalmology	500.00
Victor B. Cook—Ophthalmology	500.00
Mrs. Jessie W. Donahue—Plastic Surgery	500.00
Mrs. Michael Halpern—Tumor Registry	500.00
Dr. Ralph D. Murphy—Biliary Tract Research	500.00
Mrs. Gregory Ferend—Cardiovascular Surgery	500.00
Charles Allen Jr.—Gastric Physiology	500.00
W. E. Gilbert—General Surgery	500.00
Miscellaneous:	
General Surgery	1,205.00
Urology	820.00
Otolaryngology	935.00
Oral Surgery	250.00
Neurosurgery	200.00
Trauma	200.00
Cardiovascular Research	125.00
Ophthalmology	50.00
Total	$471,137.71

GENERAL COMMENTS

During the decade 1949–1959, clinical surgery has advanced materially. Not only have the frontiers of surgical therapy been extended into new areas, but the risk to the patient has been reduced, as evidenced by lowering of morbidity of complications and mortality rates. Investigations conducted in the laboratories for surgical reserach have been most important in bringing this about. Here is provided the proving ground for ideas and the evolving of safety mechanisms for embarking upon new surgical endeavors in diagnosis, therapy and later care—guidance and rehabilitation.

The following examples illustrate the type of new developments of the past decade that account for changes in the day's work within the department:

General Surgery.

1. First through the use of homografts and then with synthetic prostheses, it has been possible to resect or bypass diseased blood vessels and to restore continuity of circulation.

2. Intracardiac lesions have been surgically corrected while maintaining the circulation by extracorporeal mechanism as devised by Gibbon.

3. Segments of the large or small bowel have been substituted for the resected esophagus or stomach in cancer or other disease.

4. The utilization of intramedullary prostheses in the treatment of fractures has made early mobilization and rehabilitation possible.

Neurosurgery. Hypophysectomy in over 200 patients for the control of malignant disease that has spread from its primary site indicates that this procedure is ameliorative in certain types of cancer.

Ophthalmology. A direct surgical attack upon detached retina, a frequent cause of blindness, has doubled the proportion of cures and the incidence of retardation of progress of the condition.

Orthopedics. In Orthopedic Surgery the greatest advance in the past ten years has been the employment of prostheses in the correction of acute injuries and chronic deformity of the skeleton.

Otolaryngology. An audiology clinic for hearing evaluation and rehabilitation has been developed, and various types of surgery have been utilized to correct conductive hearing impairment occurring in the wake of middle ear infection.

Plastic Surgery. The immediate reconstruction of gross defects resulting from radical extirpation of cancer in the face, head, and neck reduces disability and hastens the return of the patient to normal activity.

The use of an inferiorly based pharyngeal flap to correct cleft palate has increased the attainment of satisfactory speech in over 95 per cent of patients.

One of the basic concepts held by the department is that clinical surgeons should be active in investigation, and furthermore that they should concomitantly have specific teaching assignments. In the foreseeable decades to come, the progress and advancements of surgery in teaching centers would seem to rest chiefly with those having such a combination of talents. They should be encouraged by every possible means. Their contributions accrue not only to the institution where they work, but to the broad field of medicine.

FRANK GLENN, M.D.

S. W. MOORE, M.D.

JOHN M. BEAL, M.D.

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CLASSIFICATION OF OPERATIONS

(PAVILION)

Department of Surgery

Grafts

Application of thin split thickness graft	57
Application of intermediate graft	33
Cutting of pedicle or tube graft	17
Preparation of pedicle or tube graft	14
Muscle graft	3
Application of bone graft (excluding fracture)	2
Cartilage graft	2
Fat graft	1
Composite graft	1
	130

Subcutaneous Tissue

Local excision of lesion of subcutaneous tissue	109
Incision and drainage of subcutaneous abscess	62
Wide excision of lesion of subcutaneous tissue	18
Excision of pilonidal sinus	14
Secondary closure of wound	8
Marsupialization of pilonidal sinus	7
Exploration of wound	6
Excision of skin and subcutaneous tissue, with graft	1
	225

Abdominal Wall

Exploratoty laparotomy	27
Incision and drainage of intra-abdominal abscess	10
Biopsy of peritoneum	9
Secondary suture of wound involving abdominal wall	4
Umbilectomy	3
Removal of tumor of peritoneum	2
Omentectomy	1
	56

Hernia

Inguinal herniorrhaphy	218
Ventral herniorrhaphy	36
Umbilical herniorrhaphy	29
Diaphragmatic herniorrhaphy	12
Femoral herniorrhaphy	9
Epigastric herniorrhaphy	2
	306

Skin

Repair of skin without graft	72
Excision of lesion of skin	71
Plastic on skin	15
Biopsy of lesion of skin	6
Debridement of burn of skin	6
Tattoo of lesion of skin	1
Partial excision of nail	1
	172

Breast

Local excision of lesion of breast	129
Radical mastectomy	39
Mastotomy	11
Simple mastectomy	11
Biopsy of lesion of breast	2
Mastoplasty	2
	194

Bones

Closed reduction of fracture	83
Open reduction of fracture	38
Removal of foreign body from bone	31
Biopsy of bone lesion or sternal marrow	11
Partial ostectomy	7
Insertion of traction device	7
Osteotomy	3
Bone graft for fracture	3
Drainage of bone	2
Local excision of lesion of bone	2
Exploration of bone	1
Operation for non-union of fracture	1
	189

Joints, Synovia, Cartilage

Excision of lesion of joint	17
Excision of nucleus pulposus, lumbar	9
Closed reduction of dislocation	9
Arthroplasty	8
Open reduction of dislocation	6
Decompression of cervical cord, spondylosis	4
Arthrodesis	1
Capsulotomy	1
Manipulation of joint	1
	56

BURSA

Excision of bursa	1

MUSCLES

Myectomy	21
Scalenotomy	2
Resection of muscle	1
Myoplasty	1
	25

TENDONS

Tenorrhaphy	8
Tenoplasty	3
Exploration of tendon or tendon sheath	2
Tenotomy	1
	14

FASCIA

Excision of fascia	2

EXTREMITIES

Amputation of leg	18
Amputation of toe	10
Incision and drainage of infection of foot	9
Incision and drainage of infection of hand	7
Syndactyly	5
Amputation of finger	3
	52

NOSE

Septectomy	29
Rhinoplasty	25
Reduction of fracture of nose	15
Excision of lesion of nose	7
Incision and drainage of abscess of nose	2
Turbinectomy	1
Biopsy of nose	1
Suture of nose	1
	81

SINUSES

Excision of lesion of accessory sinus	19
Radical sinusotomy	12
Ethmoidectomy	3
Closure of fistula of maxillary sinus	3
	37

LARYNX, PHARNYX, TRACHEA, BRONCHUS

Tracheostomy	62
Laryngoscopy	2
Total laryngectomy	1
Bronchoscopy	1
	66

TONSILS, ADENOIDS

Tonsillectomy alone or with adenoidectomy	229
Adenoidectomy alone	26
	255

THORAX

Insertion of chest catheter for pneumothorax	15
Thoracotomy with closed drainage	9
Thoracotomy with exploration	8
Thoracotomy with open drainage	7
Thoracoplasty	2
	41

LUNGS, PLEURA, MEDIASTINUM

Total lobectomy	15
Pneumonectomy	6
Partial lobectomy	4
Pneumonectomy with exploration	3
Pneumonectomy with local excision of lesion of lung	2
Pneumonotomy with drainage	1
Mediastinotomy with removal of lesion	1
	32

HEART, PERICARDIUM

Mitral valvulotomy	37
Closure of intraventricular septal defect	11
Closure of atrial septal defect	11
Pulmonary valvulotomy	9
Cardiac massage	8
Aortic valvulotomy	5
Aortic valvuloplasty	4
Resection of coarctation of aorta	4
Pericardiectomy	3
Exploratory cardiotomy	3
Correction of transposition of great vessels to heart	1
Correction of anomalous pulmonary drainage	1
Repair of cor triatriatum	1
	98

ARTERIES, VEINS

Phlebectomy	75
Arteriogram, cerebral	59
Venous anastomosis	16
Arterial thrombectomy	11
Aortogram	10
Ligation of patent ductus arteriosus	8
Resection of aneurysm with graft	7
Arteriography	6
Hepatic vein catheterization	6
Arteriotomy with bypass graft	5
Arterial anastomosis	5
Ligation of artery	5
Venography	4
Excision of arterial aneurysm	2
Aneurysmorrhaphy	2
Aortotomy	1
Arteriectomy	1
Arteriorrhaphy	1
Ligation of femoral veins	1
Ligation of coronary arterio-venous fistula	1
	226

SPLEEN, LYMPHATICS

Biopsy of lymph node	65
Local excision of lymph nodes	28
Splenectomy	17
Splenogram	12
Radical excision of lymph nodes	10
Excision of lesion of lymphatics	1
Incision and drainage of lymph nodes	1
Ligation of thoracic duct	1
	135

ORAL CAVITY, SALIVARY GLANDS

Cheiloplasty (including harelip)	30
Implantation of radon seeds in mouth	8
Excision of mouth or lip	7
Biopsy of mouth or lip	6
Resection of lip	2
Repair of rhino-oral fistula	2
Incision and drainage of lesion of mouth or lip	1
Stomatoplasty (excluding harelip and cleft palate)	1
Excision of cystic hygroma of neck	1
Local excision of lesion of tongue	5
Partial glossectomy	2
Biopsy of tongue	1
Glossoplasty	1

—Continued

Simple extraction of tooth	37
Surgical removal of tooth	2
Local excision of lesion of dental ridges	1
Incision and drainage of dentigerous lesion	1
Excision of tooth bud lesion	1
Biopsy of gum	1
Palatoplasty (including cleft palate)	18
Local excision of lesion of parotid gland	7
Excision of salivary gland	3
Sialolithotomy	2
Incision and drainage of salivary gland	1
Excision of lesion of salivary gland	1
TOTAL: ORAL CAVITY, SALIVARY GLANDS	142

ESOPHAGUS

Esophageal bypass with colonic interposition	3
Esophagectomy	2
Esophagogastrectomy	2
Closure of tracheo-esophageal fistula	2
Esophagomyotomy	1
	10

STOMACH

Partial gastrectomy	67
Gastroenterostomy	15
Gastrostomy	12
Gastrorrhaphy	12
Total gastrectomy	7
Gastrotomy	4
Pyloromyotomy	4
Local excision of lesion of stomach	1
Biopsy of stomach	1
	123

SMALL INTESTINE

Lysis of adhesions	20
Resection of small intestine	13
Enterorrhaphy	5
Enterostomy	4
Local excision of lesion of intestine	2
Enterotomy	1
Closure of enteric fistula	1
Reduction of volvulus	1
	47

CLASSIFICATION OF OPERATIONS (PAVILION)—*Continued*

Appendix	
Appendectomy (acute)	74
Appendectomy (chronic or incidental)	23
Appendectomy with drainage	13
	110

Colon	
Colostomy	31
Descending or sigmoid colectomy	28
Local excision of lesion of colon	21
Right colectomy	19
Abdominoperineal coloproctectomy	15
Closure of colostomy	14
Proctosigmoidoscopy	12
Total colectomy	4
Transverse colectomy	3
Partial colectomy	3
Exteriorization of colon	2
Perineal coloproctectomy	2
Reduction of volvulus	1
	155

Anus, Rectum	
Hemorrhoidectomy	32
Local excision of lesion of anus or rectum	20
Incision and drainage of perianal or perirectal abscess	10
Fistulectomy	7
Anoplasty	2
Suture of anal bleeding points	2
Dilation of anal sphincter	1
	74

Liver, Biliary Tract, Pancreas	
Cholecystectomy (chronic)	104
Cholecystectomy and choledochotomy	44
Cholecystectomy (acute)	32
Choledochotomy	11
Biopsy of liver	9
Cholecystoenterostomy	6
Percutaneous cholangiogram	6
Radical pancreatico-duodenectomy	4
Excision of cystic duct and/or gallbladder remnant	3
Cholecystostomy	2
Choledochoplasty	2
Choledochoenterostomy	2
Closure of biliary fistula	2
Partial pancreatectomy	2
Sphincterotomy, common duct	1
Pancreaticocystoenterostomy	1
	231

Kidney, Renal Pelvis	
Nephrectomy	28
Nephrostomy	11
Pyelotomy	10
Decapsulation of renal cyst	5
Nephrolithotomy	4
Pyeloureterostomy	3
Exploration of kidney	3
Partial nephrectomy	2
Incision and drainage of kidney	1
Biopsy of kidney	1
	68

Ureter	
Ureteroneocystostomy	14
Ureterotomy	13
Ureterostomy	4
Ureterectomy	2
Uretero-ileostomy	2
Ureteroplasty	1
Exploration of ureter	1
	37

Bladder, Urethra	
Local excision of lesion of bladder	57
Cystotomy, cystostomy	29
Cystoplasty, cystopexy	13
Operation of urethra	13
Partial cystectomy	10
Cystoscopy	8
Formation of ileal bladder	5
Total cystectomy	3
Operation for bladder fistula	3
Litholapaxy	3
Cystorrhaphy	2
Removal of foreign body from bladder	2
Incision and drainage of perivesical abscess	2
Revision of stoma, ileal conduit	1
	151

Male Genital System	
Circumcision	27
Plastic on penis	20
Incision of penis	1
Orchiopexy	24
Orchiectomy	19
Biopsy of testis	2
Vasectomy	46
Excision of hydrocele	22
Plastic operation on scrotum	3
Local excision of lesion of scrotum	2
Incision and drainage of abscess of scrotum	1
Excision of varicocele	1

—*Continued*

Transurethral electroresection of prostate	78
Simple retropubic prostatectomy	16
Biopsy of prostate	12
Suprapubic prostatectomy	8
Simple perineal prostatectomy	4
Radical perineal prostatectomy	2
TOTAL: MALE GENITAL SYSTEM	288

FEMALE GENITAL SYSTEM

Oophorectomy	1
Biopsy of ovary	1
	2

ENDOCRINE SYSTEM

Thyroidectomy (non-toxic)	72
Total hypophysectomy	36
Thyroidectomy (toxic)	10
Parathyroidectomy	5
Excision of thyroglossal cyst	5
Thyroidotomy	4
Adrenalectomy	4
Excision of pituitary tumor	3
Thymectomy	2
Total thyroidectomy	1
	142

SKULL, BRAIN, MENINGES

Pneumoencephalography	32
Ventriculography	32
Removal of intracranial tumor	22
Exploration of meninges, negative findings	9
Encephalography	7
Dye test for hydrocephalus	7
Postoperative elevation of bone plate	6
Drainage of meninges, hemotoma	6
Open reduction of skull fracture	4
Ventriculocisternostomy	4
Craniectomy	3
Repair of meningeal defect	3
Revision of wound infection	3
Cranioplasty	2
Incision and drainage of brain abscess	2
Exploratory craniotomy for unverified tumor	1
Exploratory craniotomy for conditions other than tumor	1
Suboccipital decompression	1
Biopsy of skull	1
Excision of lesion of meninges	1
Ventriculostomy	1
Ventriculocervical shunt	1
Craniolumbar manometrics	1
	150

SPINAL CORD

Myelogram	25
Cordotomy	13
Excision of intraspinal tumor	6
Decompression of irremovable spinal cord tumor	5
Laminectomy	2
Rhizotomy	2
Exploration of spinal cord	1
Injection of alcohol, intrathecal	1
Ureterosubarachnoid anastomosis	1
Subarachnoid peritoneal anastomosis	1
	57

NERVES

Sympathectomy (other than for hypertension)	21
Exploration of nerve	3
Retrogasserian neurotomy	3
Vagotomy	3
Sympathectomy for hypertension	3
Neurectomy	2
Anastomosis of nerve	2
Acoustic neurotomy	1
Excision of lesion of nerve	1
	39

EAR

Ear reconstruction	19
Otoplasty, unilateral or bilateral	18
Excision of mass of ear canal	7
Radical mastoidectomy	6
Myringotomy	5
Mobilization of stapes	4
Otoplasty for partial ear amputation	3
	62

EYE

Enucleation of eyeball	6
Suture of eyeball	2
Removal of foreign body in cornea	13
Keratoplasty	13
Anterior chamber implant	5
Suture of cornea	3
Keratectomy	2
Peripheral iridectomy with cautery to sclera (Scheie procedure)	18
Air injection into anterior chamber	6
Biopsy of sclera	1

—*Continued*

CLASSIFICATION OF OPERATIONS (PAVILION)—*Continued*

EYE	
Peripheral iridectomy	10
Iridencleisis	8
Cyclodialysis	5
Coreoplasty	4
Cyclodiathermy	3
Iridectomy	2
Repair of iris prolapse	2
Cataract extraction	167
Discission	4
Capsulectomy	2
Capsulotomy	1
Retinopexy	9
Ocular muscle surgery	54
Excision of orbital tumor	3
Excision of lesion of orbit	1
Plastic repair of orbit	1
Blepharoplasty	23
Blepharectomy	5
Tarsorrhaphy	2
Excision of lesion of conjunctiva	6
Revision of filtration bleb	1
Flap operation of conjunctiva	1
Dacryocystorhinostomy	3
Probing of lacrimonasal duct	1
TOTAL: EYE	387
TOTAL PAVILION OPERATIONS	4,668

CLASSIFICATION OF OPERATIONS

(PRIVATE)

Department of Surgery

GRAFTS	
Application of thin split thickness graft	40
Application of intermediate graft	25
Preparation of pedicle or tube graft	10
Cutting of pedicle or tube graft	7
Application of pinch graft	5
Cartilage graft	5
Application of bone graft (excluding fracture)	4
Fat graft	3
Composite graft	2
Muscle graft	1
	102

SUBCUTANEOUS TISSUE	
Local excision of lesion of subcutaneous tissue	113
Incision and drainage of subcutaneous abscess	38
Wide excision of lesion of subcutaneous tissue	29
Excision of pilonidal sinus	15
Marsupialization of pilonidal sinus	11
Exploration of wound	10
Secondary closure of wound	6
Excision of skin and subcutaneous tissue, with graft	1
	223

ABDOMINAL WALL	
Exploratory laparotomy	31
Biopsy of peritoneum	29
Incision and drainage of intra-abdominal abscess	11
Secondary suture of wound involving abdominal wall	7
Removal of tumor of peritoneum	3
Removal of foreign body from peritoneal cavity	2
Omentectomy	1
	84

HERNIA	
Inguinal herniorrhaphy	332
Ventral herniorrhaphy	32
Femoral herniorrhaphy	14
Diaphragmatic herniorrhaphy	11
Umbilical herniorrhaphy	7
Epigastric herniorrhaphy	4
	400

SKIN	
Excision of lesion of skin	142
Plastic on skin	63
Repair of skin without graft	56
Tattoo of lesion of skin	12
Incision and drainage of lesion of skin	6
Biopsy of lesion of skin	5
Partial excision of nail	3
	287

BREAST	
Local excision of lesion of breast	203
Radical mastectomy	77
Mastoplasty	19
Simple mastectomy	12
Biopsy of lesion of breast	6
Mastotomy	2
Excision of nipple	1
	320

BONES	
Closed reduction of fracture	41
Biopsy of bone lesion or sternal marrow	33
Open reduction of fracture	26
Local excision of lesion of bone	22
Partial ostectomy	20
Removal of foreign body from bone	17
Osteotomy	4
Exploration of bone	3
Bone graft for fracture	3
Drainage of bone	2
Complete ostectomy	2
Insertion of traction device	2
Osteoplasty	1
Fusion of bone	1
Operature for non-union of fracture	1
	178

JOINTS, SYNOVIA, CARTILAGE	
Excision of nucleus pulposus, lumbar	45
Excision of lesion of joint	30
Arthroplasty	13
Excision of semilunar cartilage	12
Arthrotomy	6
Manipulation of joint	5
Decompression of cervical cord, spondylosis	4
Closed reduction of dislocation	3
Synovectomy	2
Arthrostomy	1
Arthrodesis	1
Decompression of cervical nerve root	1
Open reduction of dislocation	1
	124

BURSA	
Excision of bursa	6
Incision and drainage of bursa	2
Removal of calcareous deposits	1
	9

MUSCLES	
Myectomy	15
Scalenotomy	3
Resection of muscle	2
	20

TENDONS	
Tenorrhaphy	9
Tenoplasty	4
Tenosynovectomy	2
Tenotomy	1
Excision of lesion of tendon	1
	17

FASCIA	
Excision of fascia	6
Fasciotomy	1
	7

EXTREMITIES	
Amputation of leg	23
Amputation of toe	13
Incision and drainage of infection of hand	10
Amputation of finger	8
Incision and drainage of infection of foot	4
Syndactyly	1
Amputation of foot	1
	60

NOSE

Septectomy	96
Rhinoplasty	76
Excision of lesion of nose	13
Reduction of fracture of nose	8
Incision and drainage of abscess of nose	3
Turbinectomy	2
	198

SINUSES

Excision of lesion of accessory sinus	41
Radical sinusotomy	15
Ethmoidectomy	5
Simple sinusotomy	4
Closure of fistula of maxillary sinus	1
	66

LARYNX, PHARYNX, TRACHEA, BRONCHUS

Laryngoscopy	38
Tracheostomy	30
Bronchoscopy	3
Total laryngectomy	2
Tracheorrhaphy	2
Epiglottidectomy	1
Local excision of branchial cleft cyst	1
	77

TONSILS, ADENOIDS

Tonsillectomy alone or with adenoidectomy	374
Adenoidectomy alone	9
	383

THORAX

Thoracotomy with exploration	17
Thoracotomy with open drainage	9
Thoracotomy with closed drainage	7
Thoracoplasty for funnel chest	1
Insertion of chest catheter for pneumothorax	1
	35

LUNGS, PLEURA, MEDIASTINUM

Total lobectomy	26
Pneumonectomy	12
Partial lobectomy	8
Mediastinotomy with removal of lesion	6
Pneumonotomy with local excision of lesion of lung	5
Pneumonotomy with exploration	2
Lung biopsy	1
Pleurectomy	1
	61

HEART, PERICARDIUM

Mitral valvulotomy	39
Cardiac massage	16
Closure of atrial septal defect	6
Aortic valvulotomy	4
Pulmonary valvulotomy	3
Closure of intraventricular septal defect	3
Resection of aorta with graft	2
Pericardiectomy	1
Aortic valvuloplasty	1
Resection of coarctation of aorta	1
Removal of tumor of ventricle	1
Exploratory cardiotomy	1
	78

ARTERIES, VEINS

Phlebectomy	120
Arteriogram, cerebral	78
Resection of aneurysm with graft	13
Arterial thrombectomy	12
Venous anastomosis	10
Ligation of artery	9
Ligation of patent ductus arteriosus	8
Arteriotomy with bypass graft	7
Arteriotomy	5
Aortogram	4
Aneurysmorrhaphy	3
Aortotomy	3
Ligation of vein	3
Closure of arteriovenous fistula	3
Arteriectomy	2
Excision of arterial aneurysm	2
Arteriorrhaphy	2
Arteriography	1
Arterial anastomosis	1
Venous thrombectomy	1
	287

SPLEEN, LYMPHATICS

Local excision of lymph nodes	46
Biopsy of lymph node	27
Radical excision of lymph nodes	11
Splenectomy	8
Splenogram	5
	97

ORAL CAVITY, SALIVARY GLANDS

Excision of mouth or lip	13
Cheiloplasty (including harelip)	9
Biopsy of mouth or lip	7
Implantation of radon seeds in mouth	4
Resection of lip	1
Repair of rhino-oral fistula	1
Stomatoplasty (excluding harelip and cleft palate)	1
Excision of sinus tract, cheek	1

—*Continued*

Local excision of lesion of tongue	6
Partial glossectomy	1
Simple extraction of tooth	24
Surgical removal of tooth	11
Dental root resection	2
Excision of tooth bud lesion	1
Palatoplasty (including cleft palate)	15
Local excision of lesion of palate	1
Biopsy of palate	1
Local excision of lesion of parotid gland	7
Sialolithotomy	5
Excision of submaxillary gland	3
TOTAL: ORAL CAVITY, SALIVARY GLANDS	114

ESOPHAGUS

Esophagectomy	3
Removal of benign tumor of esophagus	3
Esophagogastrectomy	2
Resection of esophageal diverticulum	2
Esophagojejunostomy	2
Esophagoscopy	1
Plastic on esophagus	1
Esophagomyotomy	1
Esophageal bypass with colonic interposition	1
	16

STOMACH

Partial gastrectomy	106
Gastroenterostomy	15
Total gastrectomy	8
Gastrostomy	8
Gastrorrhaphy	8
Local excision of lesion of stomach	4
Biopsy of stomach	2
Operation for gastroenteric fistula	2
Gastrotomy	1
Removal of gastrostomy prosthesis	1
Pyloroplasty	1
	156

SMALL INTESTINE

Lysis of adhesions	24
Resection of small intestine	21
Enteroenterostomy	9
Enterostomy	3
Enterorrhaphy	2
Excision of Meckel's diverticulum	2
Enterotomy	1
Biopsy of intestine	1
	63

APPENDIX

Appendectomy (acute)	83
Appendectomy (chronic or incidental)	23
Appendectomy with drainage	10
Incision and drainage of appendiceal abscess	5
	121

COLON

Descending or sigmoid colectomy	50
Local excision of lesion of colon	41
Colostomy	32
Abdominoperineal coloproctectomy	31
Right colectomy	26
Closure of colostomy	11
Total colectomy	5
Proctosigmoidoscopy	5
Transverse colectomy	3
Perineal coloproctectomy	3
Partial colectomy	2
Lysis of adhesions for obstruction	2
Multiple colotomies	2
Closure of colorectal fistula	2
Exteriorization of colon	1
Reduction of volvulus	1
	217

ANUS, RECTUM

Hemorrhoidectomy	97
Local excision of lesion of anus or rectum	50
Fistulectomy	27
Incision and drainage of perianal or perirectal abscess	17
Dilation of anal sphincter	7
Anoplasty	5
Operation for prolapse of rectum	3
Suture of anal bleeding points	2
	208

LIVER, BILIARY TRACT, PANCREAS

Cholecystectomy (chronic)	211
Cholecystectomy and choledochotomy	51
Cholecystectomy (acute)	29
Choledochotomy	23
Biopsy of liver	12
Cholecystoenterostomy	4
Choledochoenterostomy	4
Choledochostomy	4
Excision of cystic duct and or gallbladder remnant	3
Local excision of lesion of liver	2
Partial resection of liver	2
Cholecystostomy	2
Radical pancreaticoduodenectomy	2
Choledochoplasty	1
Partial pancreatectomy	1
	351

KIDNEY, RENAL PELVIS

Nephrectomy	42
Nephrostomy	13
Decapsulation of renal cyst	13
Nephrolithotomy	12
Pyelotomy	10
Pyeloplasty	8
Nephropexy	4
Partial nephrectomy	4
Exploration of kidney	3
Biopsy of kidney	1
Excision and drainage of perirenal tissue	1
	111

URETER

Ureterotomy	16
Ureteroneocystostomy	10
Ureterostomy	6
Ureteroplasty	5
Ureterocystostomy	3
Ureterectomy	2
Loop extraction of ureteral stone	2
	44

BLADDER, URETHRA

Local excision of lesion of bladder	80
Cystoplasty, cystopexy	29
Cystotomy, cystostomy	18
Cystoscopy	16
Removal of foreign body from bladder	12
Operation of urethra	11
Partial cystectomy	10
Total cystectomy	8
Litholapaxy	5
Formation of ileal bladder	4
Biopsy of bladder	2
Operation for bladder fistula	2
Implantation of radon seeds into bladder	2
Pelvic evisceration	1
Evacuation of blood clots from bladder	1
Closure of exstrophy	1
Fulguration of bladder to control bleeding	1
	203

MALE GENITAL SYSTEM

Plastic on penis	30
Circumcision	17
Local excision of lesion of penis	3
Partial amputation of penis	1
Orchiectomy	19
Orchiopexy	12
Biopsy of testis	3
Excision of lesion of epididymis	2
Epididymectomy	2
Epididymovasostomy	1
Excision of hydrocele	25
Vasectomy	11
Incision and drainage of abscess of scrotum	2
Local excision of lesion of scrotum	2
Excision of varicocele	2
Plastic operation on scrotum	1
Transurethral electroresection of prostate	153
Suprapubic prostatectomy	87
Simple retropubic prostatectomy	13
Biopsy of prostate	3
Simple perineal prostatectomy	2
Radical perineal prostatectomy	1
TOTAL: MALE GENITAL SYSTEM	392

—*Continued*

FEMALE GENITAL SYSTEM

Oophorectomy	20
Dilatation and curettage	16
Total hysterectomy	14
Pan hysterectomy	9
Ovarian cystectomy	8
Colpoperineorrhaphy	6
Salpingectomy	4
Vaginal hysterectomy	4
Biopsy of cervix	3
Pelvic examination under anesthesia	3
Operation of vulva	2
Plastic repair of perineum	2
Colpoplasty	2
Supracervical hysterectomy	2
Insertion of radon seeds into vagina	1
Biopsy of vagina	1
Trachelorrhaphy	1
	98

ENDOCRINE SYSTEM

Thyroidectomy (non-toxic)	127
Total hypophysectomy	45
Thyroidectomy (toxic)	11
Excision of pituitary tumor	7
Excison of thyroglossal cyst	7
Total thyroidectomy	6
Thyroidotomy	4
Adrenalectomy	4
Parathyroidectomy	2
	213

SKULL, BRAIN, MENINGES

Pneumoencephalography	53
Removal of intracranial tumor	31
Ventriculography	18
Drainage of meninges, hematoma	10
Postoperative elevation of bone plate	8
Repair of meningeal defect	7
Encephalography	6
Cranioplasty	5
Exploration of meninges, negative findings	3
Ventriculocisternostomy	3
Exploratory craniotomy for unverified tumor	2
Excision of skull tumor	2
Subtemporal decompression	1
Biopsy of skull	1
Excision of lesion of meninges	1
Incision and drainage of brain abscess	1
Local excision of lesion of brain	1
Ventriculostomy	1
Revision of wound infection	1
	155

SPINAL CORD

Myelogram	34
Excision of intraspinal tumor	7
Cordotomy	6
Injection of alcohol, intrathecal	5
Rhizotomy	4
Laminectomy	3
Exploration of spinal cord	1
Decompression of irremovable spinal cord tumor	1
	61

NERVES

Sympathectomy (other than for hypertension)	16
Retrogasserian neurotomy	10
Excision of lesion of nerve	7
Anastomosis of nerve	5
Neurolysis	5
Neurectomy	3
Sympathectomy for hypertension	3
Thoracic sympathectomy and poudrage	3
Exploration of nerve	2
Neurotomy	2
Vagotomy	2
Acoustic neurotomy	1
	59

EAR

Mobilization of stapes	51
Otoplasty, unilateral or bilateral	17
Excision of mass of ear canal	10
Radical mastoidectomy	5
Ear reconstruction	4
Myringotomy	2
	89

EYE

Enucleation of eyeball	6
Evisceration of eyeball	2
Orbital implant	1
Keratoplasty	10
Anterior chamber implant	6
Removal of foreign body in cornea	2
Keratectomy	2
Suture of cornea	2
Tattoo of cornea	1
Peripheral iridectomy with cautery to sclera (Scheie procedure)	26
Scleral buckle	2
Air injection into anterior chamber	1
Removal of polyethylene tube from sclera	1
Peripheral iridectomy	14
Cyclodialysis	7
Iridencleisis	6
Coreoplasty	4
Repair of iris prolapse	3
Iridotomy with transfixion of iris	1
Cyclodiathermy	1
Cataract extraction	206
Discission	6
Capsulectomy	2
Retinopexy	34
Ocular muscle surgery	111
Plastic repair of orbit	2
Orbitotomy with exploration	1
Excision of lesion of orbit	1
Blepharoplasty	16
Blepharectomy	3
Excision of lesion of conjunctiva	7
Flap operation of conjunctiva	2
Removal of foreign body, conjunctiva	1
Dacryocystorhinostomy	4
Probing of lacrimonasal duct	4
TOTAL: EYE	498

TOTAL PRIVATE OPERATIONS	6,282

CLASSIFICATION OF DEATHS

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TABLE I

OPERATIVE DEATHS, GENERAL SURGERY (PAVILION)

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
DEATHS RELATED TO CARDIOVASCULAR AND VASCULAR DISEASES: 18					
823–951	4 days	Congenital hypoplasia of pulmonary valve	†Exploration of pulmonary valve	Congestive heart failure	Yes
828–323	9 weeks	Atrial and ventricular septal defects, patent ductus arteriosus	Exploratory cardiotomy, closure of atrial septal defect	Cardiac failure	Yes (M. E.)
832–649	16 weeks	Transposition of great vessels, ventricular septal defect	Creation of atrial septal defect	Cardiac failure	Yes
753–650	2½ years	Congenital heart disease, dextroposition of aorta, intraventricular septal defect	Closure of intraventricular and intra-atrial septal defects	Progressive cardiac failure	Yes
755–368	3	Interventricular septal defect	Closure of septal defect	Cardiac arrest	Yes (M. E.)
825–988	3	Interventricular septal defect, patent foramen ovale	Closure of septal defect and patent foramen ovale	Cardiac arrest	Yes (M. E.)
639–409	10	Interventricular septal defect, pulmonic stenosis, persistent left superior vena cava	1. Closure of septal defect, pulmonic valvulotomy †2. Cardiac massage	Cardiac arrest	No
599–399	10	Ostium primum defect, pulmonary hypertension, multiple congenital anomalies	Repair of intra-atrial septal defect	Cerebral anoxia	Yes (M. E.)
492–567	11	Ventricular septal defect	1. Closure of septal defect 2. Aortic valvuloplasty	Cardiac arrest	Yes (M. E.)
687–303	39	Rheumatic heart disease, mitral insufficiency	1. Mitral valvuloplasty 2. Tracheostomy	Myocardial failure	No
233–623	42	Chronic constrictive pericarditis, congestive failure, diffuse calcification of lung	Pericardiectomy	Cardiac failure	Yes
656–453	63	Abdominal aortic aneurysm, hypertension, aortic insufficiency, arteriosclerotic cardiovascular disease	1. Resection of aneurysm with prosthetic graft replacement †2. Cardiac massage	Myocardial infarction	Yes

812–883	44	Mesenteric vein thrombosis, intestinal gangrene, post mitral valvulotomy, rheumatic heart disease, auricular fibrillation	Exploratory laparotomy	Intestinal gangrene	Yes (M. E.)
833–227	65	Celiac and superior mesenteric artery thrombosis, generalized arteriosclerosis	Exploratory laparotomy	Intestinal gangrene	Yes
831–522	75	Mesenteric thrombosis; intestinal gangrene; celiac axis thrombosis; post Austin-Moore prosthesis of hip, mid-thigh amputation, lumbar sympathectomy	1. Split skin graft to left heel 2. Small bowel and right colonic resection	Superior mesenteric thrombosis, celiac axis thrombosis	Yes (M. E.)
698–627	64	Diabetes mellitus, arteriosclerosis obliterans, diabetic gangrene of toe	Right lumbar sympathectomy, amputation of toe	Myocardial infarction	Yes
814–168	67	Diabetes mellitus, arteriosclerotic cardiovascular disease, gangrene of right lower extremity, diabetic glomerulosclerosis, Warthin's tumor	1. Mid-thigh amputation 2. Revision of amputation stump 3. Excision Warthin's tumor 4. Vasectomy	Myocardial infarction, acute congestive failure	Yes
804–990	49	Gas gangrene, left leg; orbital cellulitis, endophthalmitis; acromegaly post hypophysectomy; glaucoma; diabetic coma; arteriosclerotic cardiovascular disease	†High mid-thigh amputation	Myocardial infarction, septicemia	Yes

DEATHS RELATED TO DISEASES OF BILARY TRACT, LIVER, PANCREAS: 15

811–271	11 weeks	Neonatal hepatitis, bilateral inguinal herniae	Exploratory laparotomy, cholangiogram, cholecystostomy	Hepatic failure	Yes
821–816	42	Laennec's cirrhosis, portal hypertension, bleeding esophageal varices	†1. Portacaval shunt 2. Tracheostomy	Pneumonia, hepatorenal failure	Yes
711–707	47	Liver cirrhosis, portal hypertension, bleeding esophageal varices, diverticulitis of colon	†1. Portacaval shunt 2. Tracheostomy	Hepatorenal failure	Yes

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(* Cancer Cases: 0) († Emergencies: 6) (M. E.: Medical Examiner's case)

TABLE I: OPERATIVE DEATHS, GENERAL SURGERY (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
		(DEATHS RELATED TO DISEASES OF BILARY TRACT, LIVER, PANCREAS:15)—*Continued*			
837–370	48	Liver cirrhosis, bleeding esophageal varices	Exploratory laparotomy, portacaval shunt, jejunal resection	Hepatorenal failure	No
764–641	61	Laennec's cirrhosis, esophageal varices	1. Splenoportogram 2. Portavacal shunt 3. Tracheostomy	Hepatorenal failure	Yes
833–185	68	Liver cirrhosis, esophageal varices, gastrointestinal hemorrhage, obesity	Exploratory laparotomy, portacaval shunt	Hepatorenal failure	No
830–012	53	*Cancer of liver	Exploratory laparotomy, liver biopsy	Cancer of liver	No
666–676	77	*Cancer of gallbladder metastatic to liver, inactive duodenal ulcer	Cholecystectomy	Metastatic cancer from gallbladder	Yes
834–716	63	Sclerosing cholangitis, chronic duodenal ulcer	1. Cholecystectomy, common duct exploration, liver biopsy, cholangiogram 2. Incision and drainage of hepatic abscesses 3. Tracheostomy	Bronchopneumonia, septicemia	No (M. E.)
380–305	82	Acute cholecystitis, cholelithiasis, choledocholithiasis, arteriosclerotic heart disease	Cholecystectomy, common duct exploration	Acute myocardial infarction	Yes
444–046	68	Acute necrotizing pancreatitis, chronic bronchitis, with fibrosis and emphysema	†Exploratory laparotomy, incidental appendectomy	Acute pancreatitis	Yes
456–869	55	*Cancer of pancreas metastatic to duodenum, liver, bone; pulmonary emphysema	Exploratory laparotomy, tumor biopsy	Metastatic cancer from pancreas	Yes
838–099	62	*Cancer of head of pancreas with node metastases; five years post partial gastrectomy for cancer	Exploratory laparotomy, lymph node biopsy, cholecystojejunostomy, jejunojejunostomy	Carcinomatosis	Yes
284–679	66	*Cancer of pancreas, obesity	Radical pancreaticoduodenectomy	Acute renal insufficiency	Yes

259–004	67	*Cancer of head of pancreas metastatic to liver; chronic pancreatitis; obstructive jaundice; diabetes mellitus; splenomegaly, post cholecystectomy	Exploratory laparotomy, liver biopsy	Carcinomatosis	Yes

DEATHS RELATED TO GASTROINTESTINAL DISEASES: 14

252–087	64	*Gastric cancer, Laennec's cirrhosis	Partial gastrectomy	Metastatic cancer from stomach	Yes
673–671	55	*Recurrent gastric cancer with metastases, pulmonary emphysema	Exploratory laparotomy, biopsy of tumor, jejunostomy	Metastatic cancer from stomach, bronchopneumonia	Yes
295–942	81	*Perforated gastric cancer	†Plication of perforated gastric cancer, drainage	Peritonitis, abdominal carcinomatosis	No
669–634	74	*Volvulus of ileum with gangrene, arteriosclerotic heart disease, five years post partial gastrectomy	†Exploratory laparotomy, segmental resection of ileum, cardiac massage	Cardiac arrest	Yes (M. E.)
634–937	86	Obstructing, bleeding marginal ulcers	Resection of old gastrojejunostomy, gastrojejunostomy, cholecystostomy	Pulmonary embolus	No
210–100	85	*Chronic bleeding duodenal ulcer, arteriosclerotic heart disease, post nephrectomy and perineal resection for cancer, post gastroenterostomy	Partial gastrectomy, vagotomy	Pulmonary embolism	Yes
820–336	65	Perforated appendix, peritonitis, bleeding perforated duodenal ulcer	†Transverse colostomy, abdominal drainage	Peritonitis	Yes
533–390	55	*Cancer of colon, left indirect inguinal hernia	1. Right hemicolectomy 2. Exploratory laparotomy †3. Cardiac massage	Myocardial infarction	Yes
197–406	66	*Colonic cancer metastatic to liver, lymph nodes, and peritoneum	Axillary lymph node biopsy	Metastatic cancer from colon	Yes
821–826	74	*Cancer of hepatic flexure of colon metastatic to gallbladder and liver	1. Right hemicolectomy 2. Incision and drainage of intra-abdominal abscess	Metastatic cancer from colon	Yes

(* Cancer Cases: 14) († Emergencies: 5) (M. E.: Medical Examiner's case)

TABLE I: OPERATIVE DEATHS, GENERAL SURGERY (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operations(s)*	*Cause(s) of Death*	*Autopsy*
		(DEATHS RELATED TO GASTROINTESTINAL DISEASES: 14)—*Continued*			
747–208	52	Nephrosis, colonic papilloma, perforated colon	Transverse colostomy, abdominal drainage	Uremia	No
743–026	72	*Recurrent leiomyosarcoma of peritoneum metastatic to lymph node, liver, lungs; bilateral hydronephrosis	Partial removal of retroperitoneal tumor and omental metastases	Metastatic leiomyosarcoma from peritoneum	Yes
811–275	58	*Cancer of cecum metastatic to liver and peritoneum; colocutaneous fistula; granulating wound of abdominal wall; chronic bleeding duodenal ulcer	1. Secondary closure of abdominal wound †2. Partial gastrectomy	Metastatic cancer from cecum	Yes
294–858	69	Rectal stricture, arteriosclerotic heart disease	Abdominoperineal coloproctectomy	Cardiac arrest	Yes (M. E.)
		DEATHS RELATED TO DISEASES OF ESOPHAGUS AND LUNGS: 6			
835–461	5 days	Tracheo-esophageal fistula	Repair of fistula, gastrostomy	Leak at anastomosis site	Yes
286–497	71	*Perforated esophagus, post laryngectomy for cancer	†Exploratory laparotomy	Perforated esophagus, mediastinitis	Yes
713–958	82	*Cancer of esophagus	Retrosternal transposition of right hemicolon, cervical esophagocolostomy and cologastrostomy	Exsanguination due to bleeding duodenal ulcer	Yes
779–980	66	*Granulocytic leukemia; cardiospasm with esophagitis and ulceration; ruptured splenic infarcts; left hemothorax; perforated diaphragm	Repositioning of Barnes-Redo gastrostomy prosthesis	Granulocytic leukemia, empyema	Yes
791–123	28	Pulmonary tuberculosis with cavitation of right upper and middle lobes and left upper lobe	Right upper and middle lobectomy	Pulmonary embolus	No
813–550	64	Chronic pneumonitis, right upper lobe atelectasis, pulmonary emphysema	1. Scalene node biopsy 2. Right pneumonectomy	Tracheobronchial obstruction by mucoid secretions	Yes

DEATHS RELATED TO HERNIA: 4

700–745	69	Incarcerated umbilical hernia, small bowel obstruction, obesity, coronary artery disease	†Umbilical hernioplasty, transverse colectomy	Coronary occlusion	Yes
818–852	76	Strangulated umbilical hernia, obesity, diabetes mellitus, hypertension	†1. Umbilical hernioplasty, small bowel resection 2. Tracheostomy	Cardiac failure	Yes
569–880	77	Incarcerated ventral hernia, partial small bowel obstruction, arteriosclerotic heart disease	†Incisional hernioplasty, lysis of adhesions, reduction of incarcerated small bowel	Myocardial infarction	Yes
807–231	60	Sliding hiatus hernia	Transthoracic hiatus herniorrhaphy	Septicemia	No

DEATHS RELATED TO MISCELLANEOUS CONDITIONS: 4

801–570	38	*Uterine adenocarcinoma metastatic to liver and peritoneum	Liver biopsy	Metastatic adenocarcinoma from uterus	No
831–774	59	Multiple pulmonary emboli	Exploratory laparotomy, liver biopsy	Pulmonary infarction	No
814–161	70	Acute abscess of right calf and foot; septicemia; arteriosclerotic heart disease; diabetes mellitus; congestive heart failure	†Incision and drainage of abscess	Septicemia	No
821–807	82	Intertrochanteric fracture, left hip; brain atrophy; arteriosclerotic cardiovascular disease	1. Bilateral burr holes 2. Lorenzo screw and plate	Bronchopneumonia	Yes

(* Cancer Cases: 6) († Emergencies: 6) (M. E.: Medical Examiner's case)

TABLE I: SUMMARY

OPERATIVE DEATHS, GENERAL SURGERY (PAVILION)

Cancer cases in which cancer caused death	14	Deaths following elective operations	44
Cancer cases with other causes of death	6	Deaths following emergency operations	17
TOTAL CANCER CASES	20	TOTAL OPERATIVE DEATHS	61

TABLE II

OPERATIVE DEATHS, SURGICAL SPECIALTIES (PAVILION)

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
			FRACTURE: 2		
819–576	87	Intertrochanteric fracture of femur, femoral hernia, generalized arteriosclerosis	†1. Closed reduction, insertion of Jewett nail 2. Tracheostomy	Bronchopneumonia	Yes (M. E.)
839–928	68	Central fracture-dislocation of hip, fracture of superior and inferior pubic rami	†Vitallium cup arthroplasty, cardiac massage	Cardiac arrest	Yes (M. E.)
			NEUROSURGERY: 13		
804–986	60	*Cancer of brain with metastases	1. Bilateral carotid arteriography 2. Ventriculography, left frontal craniotomy 3. Tracheostomy	Cancer of brain	No
382–853	38	*Cancer of tongue with metastases; narcotic addiction	1. Partial excision of intraspinal tumor 2. Tracheostomy	Carcinomatosis	Yes
701–765	62	*Breast cancer with metastases; hypertensive cardiovascular disease	1. Supraclavicular node biopsy 2. Hypophysectomy 3. Elevation of bone flap 4. Tracheostomy	Cerebrovascular accident	Yes
701–215	50	*Breast cancer with metastases; post radical mastectomy, laminectomy for decompression, and hypophysectomy	Partial excision of intraspinal tumor	Metastic cancer from breast	Yes
823–929	51	*Lung cancer metastatic to brain, brain abscess	Excision of brain abscess	Metastatic cancer from lung	Yes
682–367	38	*Malignant melanoma metastatic to brain	1. Arteriogram 2. Ventriculogram 3. Partial excision of tumor	Malignant melanoma	No

834–462	47	Meningioma of tuberculum sellae	1. Bilateral carotid arteriogram 2. Excision of tumor 3. Tracheostomy	Infarction of right cerebral hemisphere	Yes
814–199	11	Cerebellar astrocytoma	1. Ventriculogram, pneumoencephalogram 2. Excision of tumor 3. Tracheostomy	Cerebellar astrocytoma	Yes
818–321	52	Intracerebellar hematoma	1. Exploratory craniotomy 2. Tracheostomy	Uremia	Yes
826–335	52	Left middle cerebral artery aneurysm, hypertensive cardiovascular disease, diabetes mellitus	1. Bilateral carotid arteriography 2. Aneurysmorrhaphy	Cerebrovascular accident	Yes
835–946	59	Anemic infarction of left cerebellar hemisphere, coronary artery disease	1. Biparietal burr holes 2. Ventriculogram 3. Tracheostomy	Cerebellar hemisphere infarction	Yes
591–929	59	Cerebrovascular insufficiency, diabetes mellitus, hypertensive cardiovascular disease	1. Carotid arteriogram †2. Cardiac massage	Cardiac arrest	Yes
502–661	67	Intracerebral hemorrhage, hypertensive cardiovascular disease	†Exploratory burr holes, ventriculography	Intracerebral hemorrhage with rupture into ventricles	Yes (M. E.)

UROLOGY: 12

672–728	47	Acute and chronic pyelonephritis, bilateral ureteral obstruction and hydronephrosis	Right nephrostomy	Septicemia	No
802–411	49	Left ureteral calculus, benign prostatic hypertrophy	Ureteral lithotomy	Uremia	Yes
722–747	48	Obstructing left ureteral calculus, pyelonephritis	†Pyelotomy, nephrostomy	Septicemia, multiple renal abscesses	Yes
251–268	70	Obstructing left ureteral calculus, acute pyelonephritis, septicemia	Pyelolithotomy, nephrostomy	Septicemia	Yes

(* Cancer Cases: 6)   († Emergencies: 5)   (M. E.: Medical Examiner's case)

TABLE II: OPERATIVE DEATHS, SURGICAL SPECIALTIES (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
			(UROLOGY: 12—*Continued*)		
390–515	55	Ureteral calculi, hydronephrotic infected kidney, septicemia, history of myocardial infarction	1. Ureterolithotomy †2. Cardiac massage	Cardiac arrest	No (M. E.)
696–651	48	Obstructing left renal calculus, post radical cystectomy with ureterosigmoidostomies	Pyelolithotomy, nephrostomy	Pyelonephritis, renal failure	Yes
802–926	42	Bilateral renal calculi, chronic pyelonephritis, acute left pyelonephritis	†Ureterolithotomy, nephrostomy	Acute pyelonephritis, uremia	No
825–354	44	Right staghorn calculus, horseshoe kidney, post nephrolithotomies	Pyelolithotomy, nephrolithotomy	Renal failure	Yes
726–163	71	*Cancer of bladder, compensated arteriosclerotic heart disease	Radical cystectomy	Adrenal exhaustion	No
817–674	62	*Cancer of bladder invading rectum; cancer of prostate; arteriosclerotic heart disease	Pelvic node dissection, sigmoid colostomy	Acute myocardial infarction	No
791–760	68	*Cancer of bladder	Segmental resection of bladder, reimplantation of ureter	Uremia, sepsis	Yes
830–597	60	*Renal cancer metastatic to humerus, diabetes mellitus	Nephrectomy	Acute renal failure	No

(* Cancer Cases: 4) († Emergencies: 2) (M. E.: Medical Examiner's case)

TABLE II: SUMMARY

OPERATIVE DEATHS, SURGICAL SPECIALTIES (PAVILION)

Cancer cases in which cancer caused death	5	Deaths following elective operations	20
Cancer cases with other causes of death	5	Deaths following emergency operations	7
TOTAL CANCER CASES	10	TOTAL OPERATIVE DEATHS	27

TABLE III

NONOPERATIVE DEATHS (PAVILION)

Number	*Age*	*Primary Diagnosis*	*Cause(s) of Death*	*Autopsy*
		GENERAL SURGERY: 9		
799–613	37	*Gastric cancer metastatic to brain, lumbar spine, spinal canal, and skull	Metastatic cancer from stomach	No
811–651	48	*Cancer metastatic to cervical and abdominal lymph nodes (primary uncertain)	Carcinomatosis, generalized peritonitis	Yes
802–219	53	*Recurrent leiomyosarcoma of stomach with metastases	Metastatic leiomyosarcoma from stomach	No
307–379	73	*§Benign bleeding gastric ulcer; post resection for gastric cancer; esophageal stricture; chronic pyelonephritis	Uremia	Yes
827–995	44	*Lung cancer with metastases, post right pneumonectomy with bronchopleurocutaneous fistula	Metastatic cancer from lung	Yes
834–026	63	*Obstructive jaundice due to cancer of liver, liver cirrhosis, portal hypertension, chronic renal disease, uremia, arteriosclerotic heart disease	Hepatorenal failure	No
703–699	77	*Rectal papilloma, inguinal hernia, thyroid adenoma, bladder cancer metastatic to iliac and para-aortic lymph nodes	Bronchopneumonia, pulmonary edema	Yes
777–409	22	§Right cerebellar hemorrhage	Right cerebellar hemorrhage	Yes (M. E.)
640–958	45	Rheumatic heart disease; auricular fibrillation; aortic, mitral, and tricuspid stenosis; hypertension; gangrene of small intestine	Peritonitis	Yes
		SURGICAL SPECIALTIES: 3		
		OTOLARYNGOLOGY: 1		
81–508	70	Fractured nose, hypertensive and arteriosclerotic cardiovascular disease	Coronary occlusion	No

(* Cancer Cases: 7) (§ Nonoperative Emergencies: 2) (M. E.: Medical Examiner's case)

TABLE III: NONOPERATIVE DEATHS (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
			UROLOGY: 2		
568–051	42	Polycystic kidneys, uremia		Uremia	Yes
823–588	24	Acute and chronic pyelonephritis due to megacystis-syndrome, uremia		Uremia	Yes

TOTAL PAVILION DEATHS—1959

Operative deaths	88
Nonoperative deaths	12
	100

Autopsies	74 (including 13 Medical Examiner's cases)	74%
No autopsies	26 (including 2 Medical Examiner's cases)	
	100	

Cancer cases in which cancer caused death	23
Cancer cases with other causes of death	14
TOTAL CANCER CASES	37

Deaths following operative emergencies	24
Deaths following nonoperative emergencies	2
TOTAL DEATHS FOLLOWING EMERGENCIES	26

TABLE IV

OPERATIVE DEATHS, GENERAL SURGERY (PRIVATE)

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
			DEATHS RELATED TO GASTROINTESTINAL DISEASES: 26		
822–367	74	*Gastric cancer	Exploratory laparotomy, omental biopsy, ileotransverse colostomy	Carcinomatosis	Yes
826–733	49	*Gastric cancer	1. Total gastrectomy, jejunal interposition, splenectomy, partial pancreatectomy 2. Exploratory laparotomy, cholecystostomy	Septicemia	No

308–753	50	*Recurrent gastric cancer	Exploratory laparotomy, jejunal resection	Gastric cancer	Yes
813–656	69	*Gastric cancer	Partial gastrectomy	Massive wound infection, septicemia	Yes
774–510	55	*Resected gastric cancer metastatic to liver and peripancreatic lymph nodes; stenotic proximal stoma of gastrojejunostomy; dilated duodenum; liver abscesses	†Exploratory laparotomy	Liver abscesses	Yes
754–082	70	*Abdominal carcinomatosis	Exploratory laparotomy	Abdominal carcinomatosis	Yes
684–892	59	*Abdominal carcinomatosis from ovarian cancer, nine years post radical mastectomy	Lysis of adhesions, enterotomy repair, intra-abdominal tissue biopsy, exteriorization of right half of transverse colon	Bronchopneumonia	Yes
820–764	72	Gastrointestinal bleeding, coronary artery disease, recent myocardial infarction	†1. Partial gastrectomy, cholecystostomy †2. Ligation of bleeding points, vagotomy, gastrostomy	Gastrointestinal hemorrhage	No
727–680	81	*Recurrent colonic cancer, small bowel obstruction, arteriosclerotic cardiovascular disease	†Lysis of adhesions, resection of jejunal and ileal segments, gastrostomy	Coronary occlusion, myocardial infarction	Yes
820–745	87	Intestinal obstruction, arteriosclerotic cardiovascular disease	Exploratory laparotomy, lysis of adhesions	Coronary occlusion	Yes
786–398	56	Subhepatic abscess, pyloroduodenal obstruction, post common duct exploration, diabetes mellitus	1. Drainage of abscess, anterior gastrojejunostomy 2. Closure of wound evisceration	Uremia, subhepatic abscess	Yes
820–236	57	Duodenal ulcer	1. Partial gastrectomy †2. Closure of wound dehiscence, drainage of blown duodenal stump	Gastrointestinal hemorrhage, peritonitis	Yes
669–072	63	Perforated duodenal ulcer	†1. Plication of ulcer 2. Gastroenterostomy	Pulmonary edema	Yes

(* Cancer Cases: 8)   († Emergencies: 6)

TABLE IV: OPERATIVE DEATHS, GENERAL SURGERY (PRIVATE)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
		(Deaths Related to Gastrointestinal Diseases: 26—*Continued*)			
803–466	82	Bleeding, perforated duodenal ulcer with obstruction; chronic cholecystitis; cholelithiasis	†Partial gastrectomy, gastrojejunostomy, cholecystectomy, tube choledochostomy	Perforated duodenal ulcer	Yes
814–786	Newborn	Congenital duodenal stenosis, annular pancreas, mongolism, interauricular septal defect	Duodenojejunostomy	Duodenal stenosis	Yes
820–047	53	*Perforated colonic cancer, peritonitis, rheumatic heart disease, enlarged heart, mitral stenosis	†1. Cecostomy 2. Ileotransverse colostomy	Peritonitis, congestive heart failure	Yes
741–932	59	*Colonic cancer, jejunocolic fistula, arteriosclerotic cardiovascular disease	Jejunojejunostomy	Pulmonary edema	No
811–929	64	*Sigmoid cancer with obstruction and metastases	Exploratory laparotomy, cecostomy	Carcinomatosis	Yes
827–626	76	*Perforated sigmoid cancer, generalized peritonitis, arteriosclerotic cardiovascular disease	Transverse colostomy	Myocardial infarction	Yes
835–209	78	*Cancer of sigmoid, peritoneum, and fallopian tube; acute dermatomyositis	1. Deltoid skin and muscle biopsy 2. Pelvic peritoneal biopsy, gastrostomy	Bronchopneumonia	No
794–914	55	*Carcinomatosis	†Transverse colostomy	Carcinomatosis	No
712–711	59	Sigmoid diverticulitis; enterocutaneous, enterovaginal, and enterovesical fistulae; chronic cystitis; malnutrition; pelvic abscess	1. Rectosigmoid resection, closure of transverse colostomy and vesicopelvic fistula, cholecystostomy, gastrostomy, partial ileal resection 2. Revision of colostomy	Malnutrition, pneumonia, intra-abdominal abscess	Yes
818–785	29	Sigmoid polyp, fibrocystic breast disease, psychoneuroses	1. Aspiration breast cyst 2. Excision sigmoid polyp †3. Cardiac massage †4. Cardiac massage	Cardiac arrest	No

507–323	36	Ulcerative colitis, cecal perforation, fibrocalcific tuberculosis	1. Right hemicolectomy, ileotransverse colostomy 2. Drainage of ileocolic anastomosis 3. Drainage of intra-abdominal abscess 4. Biopsy of liver	Abdominal abscess, liver necrosis, postoperative pancreatitis	Yes (M. E.)
186–655	76	Obstruction of transverse colon, cerebrovascular accident, Charcot's joints of knees, ventral hernia	1. Temporal burr holes 2. Release of large bowel volvulus 3. Tracheostomy	Multiple cerebral infarctions, bronchopneumonia	Yes
764–555	25	*Rectal cancer, abdominal carcinomatosis, large bowel obstruction	Transverse colostomy	Carcinomatosis	No

DEATHS RELATED TO CARDIOVASCULAR AND VASCULAR DISEASES: 11

826–909	1½	*Rhabdomyofibroma of left ventricle	Resection of tumor	Cardiac arrest	Yes (M. E.)
795–549	4	Intraventricular septal defect	Closure of defect, with prosthesis	Cardiac failure	Yes
528–835	13	Pulmonic stenosis	Pulmonic valvulotomy	Congestive heart failure	Yes
822–594	57	Rheumatic heart disease, mitral stenosis and insufficiency, congestive heart failure, hepatosplenomegaly	Mitral valvulotomy	Embolus to brain	No
827–741	63	Arteriosclerotic cardiovascular disease, peripheral vascular insufficiency, uremia, congestive heart failure	Left aortico-femoral bypass	Abdominal aortic thrombosis	No
762–566	64	Hemolytic anemia, arteriosclerotic heart disease	†Cardiac massage	Multiple pulmonary emboli	Yes
179–411	55	Terminal aortic thrombosis, generalized arteriosclerosis, hiatus hernia, acute cholecystitis	Exploratory laparotomy, right aortic-femoral bypass with prosthetic replacement	Terminal aortic thrombosis	Yes
819–364	71	Right common iliac artery thrombosis	1. Aortogram 2. Multiple arteriotomies, common iliac artery resection, insertion of aortic bifurcation graft	Cardiovascular collapse	Yes

(* Cancer Cases: 8) († Emergencies: 6) (M. E.: Medical Examiner's case)

TABLE IV: OPERATIVE DEATHS, GENERAL SURGERY (PRIVATE)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
(DEATHS RELATED TO CARDIOVASCULAR AND VASCULAR DISEASES: 11—*Continued*)					
830–335	50	Ruptured arteriosclerotic aneurysm, abdominal aorta	†Exploratory laparotomy	Ruptured abdominal aortic aneurysm	Yes (M. E.)
626–377	79	Ruptured abdominal aortic aneurysm	†Resection of aneurysm with graft	Ruptured abdominal aortic aneurysm	Yes
667–192	92	Ruptured aneurysm of left internal iliac artery; aneurysms of abdominal aorta and right internal iliac artery; arteriosclerotic cardiovascular disease	†Resection of abdominal aortic aneurysm with prosthetic replacement	Pulmonary edema	Yes
DEATHS RELATED TO DISEASES OF ESOPHAGUS AND LUNGS: 8					
608–168	54	*Cancer of esophagus with metastases	Esophagoscopy, supraclavicular node biopsy	Carcinomatosis	Yes
802–197	68	*Recurrent epidermoid cancer of esophagus, gastrointestinal bleeding, ventral hernia, sigmoid diverticulosis	Exploratory thoracotomy, esophagoscopy, mobilization of esophagus	Cancer of esophagus, bronchopneumonia, pulmonary edema	Yes
810–374	72	*Cancer of esophagus, cerebral arteriosclerosis	1. Gastrostomy 2. Tracheostomy 3. Revision of gastrostomy	Cancer of esophagus with metastases	Yes
823–288	51	Bronchiectasis, left upper and lower lobe abscesses	Bronchoscopy, left upper lobectomy, decortication of left lower lobe	Respiratory insufficiency	Yes
655–337	72	*Bronchogenic cancer with metastases; lymphoma; arteriosclerotic heart disease	Exploratory laparotomy, biopsy of liver	Pulmonary edema	Yes
774–380	57	*Bronchogenic cancer with metastases; arteriosclerotic heart disease; hypertensive cardiovascular disease; duodenal ulcer; diabetes mellitus; cholelithiasis.	Right pneumonectomy	Myocardial infarction, congestive heart failure, pulmonary edema	No

811–558	60	*Lung cancer, bronchopleural fistula	Open thoracotomy	Bronchopneumonia	Yes
784–091	62	*Recurrent cancer of lung	1. Right pneumonectomy †2. Exploratory thoracotomy, ligation of bleeding points	Hemorrhagic shock	Yes

DEATHS RELATED TO DISEASES OF BILIARY TRACT, LIVER, PANCREAS: 5

798–749	78	*Cancer of ampulla of Vater, arteriosclerotic heart disease	Whipple procedure	Massive hematemesis	No
820–448	65	*Cancer of liver, hepatoma	Laparotomy, liver biopsy	Cancer of liver	Yes
835–539	48	Ascites, hepatorenal failure	Portacaval shunt	Hepatic failure	No
801–103	72	Bleeding esophageal varices, portal cirrhosis, bronchiectasis, arteriosclerotic heart disease, cholelithiasis	†Exploratory thoracotomy, biopsy of spleen and diaphragm	Massive bleeding from esophageal varices, aspiration pneumonitis	No
822–515	36	*Cancer of pancreas metastatic to liver	†Exploratory laparotomy, biopsy of liver	Carcinomatosis	Yes

DEATHS RELATED TO DISEASES OF KIDNEY AND THYROID: 2

384–079	54	Acute pyelonephritis, perinephric abscess, post right hemicolectomy	Exploratory laparotomy, right nephrectomy	Peripheral vascular collapse	Yes
834–107	69	*Recurrent thyroid cancer, obesity, tracheal obstruction, left vocal cord paralysis	Excision of cancer of low neck, sternum, superior mediastinum; implantation of radon seeds	Right tension pneumothorax, bilateral aspiration pneumonia	Yes

(* Cancer Cases: 11) († Emergencies: 6)

TABLE IV: SUMMARY

Operative Deaths, General Surgery (Private)

Cancer cases in which cancer caused death	11	Deaths following elective operations	36
Cancer cases with other causes of death	16	Deaths following emergency operations	16
Total Cancer Cases	27	Total Operative Deaths	52

TABLE V

OPERATIVE DEATHS, SURGICAL SPECIALTIES (PRIVATE)

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Casue(s) of Death*	*Autopsy*
			FRACTURE: 5		
831–138	82	Intertrochanteric fracture of femur, anemia, congestive heart failure	Closed reduction, insertion of Jewett nail and plate	Pyelonephritis, septicemia	Yes
760–968	87	Intertrochanteric fracture of femur, arteriosclerotic heart disease, congestive failure	†Open reduction, insertion of Jewett nail	Cerebral infarction, arteriosclerotic heart disease	Yes
538–111	59	Multiple fractures: femur, pelvis, ribs; multiple abrasions	1. Open reduction, hip †2. Tracheostomy	Multiple fractures	Yes (M. E.)
823–282	73	Multiple fractures of skull with brain damage; fractures of humerus and ulna; renal failure	1. Bilateral burr holes †2. Tracheostomy	Brain laceration with cerebral compression	Yes (M. E.)
794–094	64	*Lung cancer metastatic to cervical spine and node	1. Application of Crutchfield tongs 2. Cervical node biopsy	Metastatic cancer from lung	No
			NEUROSURGERY: 21		
810–354	41	*Breast cancer with metastases	Hypophysectomy	Carcinomatosis	No
805–976	45	*Breast cancer metastatic to nerves, skin, parotid gland; ovarian granulosa cell tumors	1. Partial excision of iutraspinal tumor 2. Tracheostomy	Metastatic cancer from breast	No
827–412	51	*Spinal cord compression due to breast cancer metastases	Partial excision of intraspinal tumor	Carcinomatosis	No
823–886	51	*Breast cancer with metastases; essential hypertension	Left carotid arteriogram	Breast cancer metastatic to brain (unverified)	No
837–464	56	*Breast cancer metastatic to skin and lymph nodes; complete heart block	Total hypophysectomy	Cardiac asystole	Yes
813–094	54	*Lung cancer with cord compression, superior vena caval syndrome	Partial excision of intraspinal tumor	Carcinomatosis	Yes

814–796	73	Cerebral hemorrhage, skull fracture, emphysema, cholelithiasis, hiatus hernia	1. Bilateral postparietal burr holes 2. Tracheostomy	Cerebral hemorrhage	Yes (M. E.)
820–010	44	Intracranial hemorrhage	†1. Burr holes †2. Tracheostomy	Intracranial hemorrhage	Yes
819–843	62	Intracranial aneurysm of left internal carotid artery, coronary artery disease	1. Carotid arteriograms 2. Craniotomy, excision of aneurysm 3. Ligation of artery	Massive intracranial hemorrhage	No
476–615	70	Subarachnoid hemorrhage, hypertensive cardiovascular disease, arteriosclerotic cardiovascular disease	1. Biparietal burr holes, exploration of left cerebellopontine angle 2. Tracheostomy	Subarachnoid hemorrhage	Yes
828–614	56	Brain abscess, hypertensive cardiovascular disease	1. Arteriogram 2. Ventriculogram, excision of brain abscess †3. Cardiac massage	Cardiac arrest	Yes
815–879	44	Aspergillosis brain abscess, subacute glomerulonephritis	1. Ventriculogram 2. Craniotomy, excision of brain abscess 3. Tracheostomy	Brain abscess	No
822–103	62	*Glioblastoma multiforme of right central region	1. Arteriogram 2. Partial excision of glioma	Glioblastoma multiforme	No
800–392	69	*Glioblastoma multiforme of left temporal lobe	1. Carotid arteriogram 2. Left craniotomy, tumor biopsy, decompression	Glioblastoma multiforme	Yes
828–250	23	Intracranial chordoma, obesity	1. Carotid arteriogram 2. Pneumoencephalogram 3. Ventriculogram 4. Vertebral arteriogram 5. Temporal craniotomy †6. Cardiac massage, opening of craniotomy wound, insertion of ventricular catheter	Brain stem compression	Yes
828–472	57	Acoustic neuroma, chronic purulent otitis media, inactive pulmonary tuberculosis, pulmonary fibrosis	1. Excision of neuroma 2. Tracheostomy	Brain stem edema	Yes

(* Cancer Cases: 9)   († Emergencies: 7)   (M. E.: Medical Examiner's case)

TABLE V: OPERATIVE DEATHS, SURGICAL SPECIALTIES (PRIVATE)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operations(s)*	*Cause(s) of Death*	*Autopsy*
			(NEUROSURGERY: 21—*Continued*)		
803–776	53	Recurrent sphenoid ridge meningioma	1. Left craniotomy 2. Removal of meningioma 3. Removal of bone plate †4. Cardiac massage	Intracranial hemorrhage	Yes
144–975	57	Skull fracture, subdural hematoma, diabetes mellitus, hypertensive cardiovascular disease	1. Burr holes, drainage of hematoma 2. Tracheostomy	Cerebral cortical lacerations, cerebral edema, brain stem hemorrhages	Yes (M. E.)
794–951	62	Brain laceration, skull fracture, subdural hematoma	†Biparietal and left subtemporal burr holes, tracheostomy	Brain laceration	Yes (M. E.)
820–771	56	Right trigeminal neuralgia, hypertensive cardiovascular disease	1. Retrogasserian neurotomy, occipital approach 2. Exploration of wound	Cerebrovascular accident	Yes
767–194	17	Malignant hypertension, surgical absence of right kidney	1. Left thoracolumbar sympathectomy 2. Tracheostomy	Anuria, cerebrovascular accident	Yes
			PLASTIC SURGERY: 1		
810–878	7 weeks	Macroglossia, micrognanthia, pectus excavatum, mass in cheek	1. Douglas procedure 2. Douglas procedure 3. Tracheostomy	Mucous plug in tracheostomy tube	Yes
			UROLOGY: 9		
816–896	60	Benign prostatic hypertrophy, diverticulitis, bilateral inguinal herniae	Suprapubic prostatectomy	Septicemia	Yes
832–517	67	Benign prostatic hypertrophy, senile emphysema	†Transurethral resection of prostate, cardiac massage	Cardiac arrest	No (M. E.)
835–700	86	Benign prostatic hypertrophy, arteriosclerotic heart disease, abdominal aortic aneurysm, inguinal herniae, emphysema, bundle branch block	Transurethral resection of prostate	Cardiac arrest	No (M. E.)

677–717	77	*Cancer of bladder, arteriosclerotic cardiovascular disease, hiatus hernia	Total cystectomy, bilateral ureterosigmoidostomies	Perforation of sigmoid colon	Yes
823–837	62	*Cancer of bladder, bleeding gastric ulcers, cerebrovascular accident	1. Transurethral resection of bladder 2. Radical cystectomy 3. Partial gastrectomy	Cerebrovascular accident	Yes
102–423	52	*Chronic bilateral pyelonephritis and cystitis; cystotomy; colostomy; five years post abdominoperineal resection for rectal cancer; abdominal wall lipoma	1. Ureterocutaneous anastomosis; repair of left common iliac artery and vein; ligation of ureter and of hypogastric veins 2. Ligation left common iliac artery 3. Mid-thigh amputation	Sepsis	No
831–291	69	Pyelonephritis, obstruction of urinary tract, uremia, hemorrhagic cystitis	Bilateral nephrostomies	Uremia, hypocalcemia	No
640–430	49	Right pyelolithiasis, hypertension	Pyelolithotomy, modified renal split, pyeloplasty	Postoperative pancreatitis	No
827–342	55	Polycystic kidneys, renal failure	1. Cystoscopy, retrograde pyelography 2. Exploration of kidney, renal biopsy	Uremia	No

(* Cancer Cases: 3) († Emergencies: 3) (M. E.: Medical Examiner's case)

TABLE V: SUMMARY

Operative Deaths, Surgical Specialties (Private)

Cancer cases in which cancer caused death	8	Deaths following elective operations	27
Cancer cases with other causes of death	4	Deaths following emergency operations	9
Total Cancer Cases	12	Total Operative Deaths	36

TABLE VI

NONOPERATIVE DEATHS (PRIVATE)

Number	*Age*	*Primary Diagnosis*	*Cause(s) of Death*	*Autopsy*
		GENERAL SURGERY: 20		
280–945	45	*Breast cancer metastatic to bones and viscera, post simple mastectomy	Metastatic cancer from breast, bronchopneumonia	No
830–348	56	*Cancer of upper thoracic esophagus, post hepatitic hepatomegaly	Esophageal obstruction, anemia, malnutrition	No
817–642	51	*Lung cancer	Bronchial obstruction	Yes
806–290	61	*Lung cancer metastic to pleura, pleural effusion	Suicide	No
803–775	55	*Bronchogenic cancer metastatic to brain, post left pneumonectomy	Bronchogenic cancer metastatic to brain	No
835–552	61	*Bronchogenic cancer metastatic to lymph nodes and peritoneum; post lower lobectomy; benign prostatic hypertrophy	Carcinomatosis	No
817–005	64	*Gastric cancer	Carcinomatosis	No
549–805	63	*Retroperitoneal sarcoma	Sarcomatosis	Yes
794–954	46	*Sigmoid cancer, intra-abdominal carcinomatosis	Aspiration of vomitus	No
584–183	63	*Sigmoid cancer; abdominal carcinomatosis; enterocutaneous, enterovaginal, and colovaginal fistulae	Bronchopneumonia	Yes
783–110	62	*Cancer of hepatic flexure of colon with obstruction, perforation, peritonitis; incisional hernia; benign prostatic hypertrophy	Peritonitis	Yes
795–194	69	*Rectosigmoid cancer metastatic to liver and peritoneum; senile emphysema; arteriosclerotic heart disease	Carcinomatosis	No
770–511	80	*§Perforated duodenal ulcer with abscess formation; generalized peritonitis; two years post abdominoperineal resection for rectal cancer; incisional hernia	Peritonitis	Yes

825–871	69	*§Cancer of head of pancreas, aneurysm of abdominal aorta	Cancer of head of pancreas	Yes
811–592	67	*Cancer of head of pancreas with metastases; post cholecystoduodenostomy; dehydration; obstipation; ascites; anemia	Metastatic cancer from pancreas, ascending cholangitis, liver abscesses	Yes
367–583	79	*§Acute fulminating pancreatitis, three weeks post cholecystectomy and common duct exploration	Acute pancreatitis	Yes
500–716	70	*Cancer of ovary, carcinomatosis, post transverse colostomy for intestinal obstruction	Carcinomatosis	Yes
828–629	39	Rheumatic heart disease; mitral stenosis; mitral and tricuspid insufficiency; auricular fibrillation; congestive heart failure	Active rheumatic endocarditis, rheumatic pneumonitis	Yes
822–380	49	Chronic cholecystitis, coronary artery disease, hypercholesterolemia	Coronary occlusion	Yes
672–447	93	Acute proctitis, senility	Senility	Yes

SURGICAL SPECIALTIES: 11

NEUROSURGERY: 2

823–494	44	*Malignant melanoma with intracranial metastases	Malignant melanoma with intracranial metastases	Yes
837–626	44	*Breast cancer metastatic to bone, lungs, and liver	Carcinomatosis	No

PLASTIC SURGERY: 1

822–127	26	Second and third degree thermal burns of 80% of body surface	Body surface burns, septicemia	Yes (M. E.)

(* Cancer Cases: 19) (§ Nonoperative Emergencies: 3) (M. E.: Medical Examiner's case)

TABLE VI: NONOPERATIVE DEATHS (PRIVATE)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Cause(s) of Death*	*Autopsy*
		UROLOGY: 8		
814–794	52	*Cancer of bladder metastatic to abdomen; urethral stricture; nephrolithiasis; neurodermatitis	Uremia	Yes
785–046	84	*Cancer of bladder, uremia	Uremia	No
489–144	76	*Cancer of bladder, bilateral hydronephrosis, uremia, right lower lobe pneumonia	Pneumonia, cachexia, uremia	Yes
271–783	75	*Cancer of prostate, bacteremia, uremia	Cancer of prostate	No
420–838	63	*Cancer of cervix with metastases; ureteral obstruction; uremia; anemia; dehydration	Cancer of uterine cervix	Yes
536–957	77	Benign prostatic hypertrophy, hypertensive cardiovascular disease, enlarged heart, left bundle branch block	Coronary occlusion	No
814–444	69	Anuria, septicemia, arteriosclerotic cardiovascular disease, post suprapubic prostatectomy	Anuria	Yes (M. E.)
659–587	84	Arteriosclerotic heart disease, heart failure, benign prostatic hypertrophy, incarcerated inguinal hernia, pulmonary emphysema	Bronchopneumonia	No

(* Cancer Cases: 5) (M. E.: Medical Examiner's case)

TOTAL PRIVATE DEATHS—1959

Operative deaths	88
Nonoperative deaths	31
	119

Autopsies	79	(including 10 Medical Examiner's cases)	66.4%
No autopsies	40	(including 2 Medical Examiner's cases)	
	119		

Cancer cases in which cancer caused death	32
Cancer cases with other causes of death	30
TOTAL CANCER CASES	62

Deaths following operative emergencies	25
Deaths following nonoperative emergencies	3
TOTAL DEATHS FOLLOWING EMERGENCIES	28

TABLE VII

OPERATIVE DEATHS, GENERAL SURGERY (SEMIPRIVATE TEACHING SERVICE)

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
		DEATHS RELATED TO GASTROINTESTINAL DISEASES: 9			
824–484	46	Massively bleeding gastric ulcer, chronic bronchitis	†Partial gastrectomy	Pulmonary embolus	No
755–026	63	*Bleeding gastric ulcer; lung cancer metastatic to liver; hypertensive and arteriosclerotic cardiovascular disease; congestive failure; bronchopneumonia; *situs inversus viscerum*	†Partial gastrectomy, tracheostomy	Bronchopneumonia	Yes
832–542	58	*Retroperitoneal sarcoma (reticulum cell type)	Biopsy of intra-abdominal tumor	Retroperitoneal sarcoma	Yes
687–754	69	*Recurrent retroperitoneal liposarcoma, arteriosclerotic heart disease	†Excision of liposarcoma, cardiac massage	Hemorrhagic shock	Yes
780–211	46	*Small bowel obstruction, abdominal carcinomatosis from cancer of ovary	Exploratory laparotomy, ileotransverse colostomy, jejunostomy	Carcinomatosis	No
834–350	45	Enterocutaneous fistula, gastric ulcer	†Partial gastrectomy, ileocolostomy	Intra-abdominal hemorrhage	Yes
43–204	65	*Hiatus hernia, reflux esophagitis, esophageal stricture, sigmoid cancer metastatic to liver	Partial esophagogastrectomy with jejunal interposition; partial hepatic lobectomy; sigmoid resection	Metastatic cancer from sigmoid colon	Yes
818–365	68	Chronic ulcerative colitis with perforated colon, chronic duodenal ulcer, arteriosclerotic heart disease, paroxysmal atrial fibrillation	1. Partial colectomy and ileostomy †2. Partial gastrectomy and vagotomy †3. Cardiac massage	Acute myocardial infarction	No
824–465	83	Perforated sigmoid diverticulitis, hypertension, arteriosclerotic and hypertensive cardiovascular disease	†Exploratory laparotomy, sigmoid and transverse colostomies	Uremia, generalized peritonitis	Yes

(* Cancer Cases: 5) († Emergencies: 7) (M. E.: Medical Examiner's case)

TABLE VII: OPERATIVE DEATHS, GENERAL SURGERY (SEMIPRIVATE TEACHING SERVICE)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
		DEATHS RELATED TO CARDIOVASCULAR AND VASCULAR DISEASES: 6			
838–970	43	Rheumatic heart disease; aortic, mitral, and tricuspid stenosis and insufficiency; pulmonic stenosis	Aortic and mitral valvulotomy	Acute myocardial insufficiency	Yes (M. E.)
817–055	44	Aortic stenosis	Aortic valvulotomy	Renal and cardiac failure	Yes
814–241	59	Arteriosclerotic occlusive peripheral vascular disease	1. Endarterectomy of aorta, common and external iliac arteries 2. Amputation of left leg 3. Amputation of right leg	Septicemia	No
834–134	63	Aneurysm of thoracic aorta, arteriosclerotic heart disease	1. Resection of aortic aneurysm with graft †2. Cardiac massage	Intrathoracic hemorrhage	Yes
833–934	63	Atherosclerosis of abdominal aorta, arteriosclerotic heart disease	Aortico-popliteal bypass grafts, lumbar sympathectomy	Left renal artery thrombosis, bilateral renal infarctions	Yes
718–830	84	Superior mesenteric artery thrombosis, arteriosclerotic heart disease	†Endarterectomy of mesenteric artery thrombosis	Gangrene of small intestine	Yes
		DEATHS RELATED TO MISCELLANEOUS CONDITIONS: 5			
438–939	70	*Cancer of esophagus, arteriosclerotic heart disease	1. Gastrostomy 2. Esophagectomy 3. Tracheostomy	Septicemia	Yes
831–946	58	*Lung cancer, chronic pulmonary insufficiency, emphysema, gynecomastia of left breast	1. Scalene node biopsy, excision of tumor of breast 2. Thoracotomy, upper lobectomy †3. Cardiac massage	Atelectasis, pneumonia	Yes
816–614	59	*Cancer of pancreas metastatic to liver, omentum, and peritoneum	1. Epitrochlear node biopsy 2. Exploratory laparotomy, omental biopsy	Metastatic cancer from pancreas	Yes
164–739	57	*Cancer of ovary, carcinomatosis	Biopsy of abdominal wall	Carcinomatosis	Yes
776–510	51	Liver cirrhosis	1. Portacaval shunt 2. Splenorenal shunt	Hepatorenal insufficiency	No

(* Cancer Cases: 4) († Emergencies: 3) (M. E.: Medical Examiner's case)

TABLE VIII

NONOPERATIVE DEATHS, GENERAL SURGERY (SEMIPRIVATE TEACHING SERVICE)

Number	*Age*	*Primary Diagnosis*	*Cause(s) of Death*	*Autopsy*
807–405	62	*Rectal cancer with metastases; obesity; essential hypertension	Recurrent rectal cancer, intestinal obstruction, uremia	No
831–155	65	*Cancer of ampulla of Vater metastatic to liver	Metastatic cancer from ampulla of Vater	Yes
591–576	72	*Breast cancer, chronic bronchitis	Metastatic cancer from breast	Yes
471–144	87	Benign prostatic hypertrophy, left olecranon bursitis, chronic nephritis, arteriosclerotic and hypertensive cardiovascular disease	Uremia	Yes
836–258	65	§Aneurysm of aortic arch, arteriosclerotic heart disease	Rupture of aortic arch aneurysm	No
815–206	67	§Infected third degree burns of 20% of body surface, congestive heart failure, acute renal failure, bronchopneumonia, septicemia	Bronchopneumonia, lung abscess	Yes (M. E.)

(* Cancer Cases: 3) (§ Nonoperative Emergencies: 2) (M. E.: Medical Examiner's case)

TOTAL DEATHS ON SEMIPRIVATE TEACHING SERVICE—1959

Operative deaths	20	Autopsies	19	(including 2 Medical Examiner's cases).... 73.1%
Nonoperative deaths	6	No autopsies	7	
	26		26	

Cancer cases in which cancer caused death	8	Deaths following operative emergencies	9
Cancer cases with other causes of death	4	Deaths following nonoperative emergencies	2
TOTAL CANCER CASES	12	TOTAL DEATHS FOLLOWING EMERGENCIES	11